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ABSTRACT

A project was undertaken to develop a model for establishing normative costs and budget guidelines for California's community colleges. The model was developed using adaptations of microcomputer software and tested using data from the Chancellor's Office of the California Community Colleges and from the Marin Community College District (MCCD). Conclusions drawn regarding MCCD included the following: (1) compared with similar districts in 1982-83, MCCD exhibited wider differences in its ratios to total operating costs for costs of instruction and instructional services, and maintainance and operations, than it exhibited in its ratios to total operating costs for costs of student services, and general services; (2) MCCD experienced a .71% change in average daily attendance from 1977-78 to 1982-83, while similar districts experienced a 9% to 10% change; and (3) compared with other districts, MCCD exhibited a 2% to 28% larger ratio of assignable square feet to average daily attendance, which may have influenced MCCD's cost of maintenance and operations. The study results showed the model to be a cost effective way for community college districts to compare their costs with similar districts on an average basis. The study report includes a review of related literature, a description of the model, and data tables exhibiting comparative financial statistics. (EJV)

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DEVELOPMENT OF A COST-EFFECTIVE MODEL THAT CALIFORNIA COMMUNITY COLLEGE DISTRICTS CAN USE TO COMPARE THEIR COSTS WITH THOSE OF SIMILAR DISTRICTS

by

Nancy E. Stetson

A Major Applied Research Project Presented in
Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

Nova University

July, 1985

JC 850 603

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Seven people helped me plan, conduct, and evaluate this study. Dr. Elizabeth L. Van Dalsem, MARP Advisor, responded quickly and knowledgeably to drafts both of the proposal and the Major Applied Research Project report; and sent welcomed messages of good cheer. Local Committee Member, Dr. Martha Nawy, extended prompt and helpful guidance. I also am grateful to Dr. Phil DeTurk, Central Staff, who served as the third member of my Committee.

Dr. Otto Roemmich, Consultant to the Marin Community College District Board of Trustees during 1984-85, helped by recognizing the value of this study to MCCD and to the other sixty-nine California community college districts. Dr. George Kozitza, Vice President of Administrative Services at MCCD, offered helpful criticism. Dr. Glenn Gooder, Consultant to the California Community Colleges' Differential Cost Funding Study, read and commented on an early draft report of this study. He also led the team that conducted the research upon which this study primarily was based.

Finally, I gratefully acknowledge the daily help and unflinching support of my best friend, Dr. Charles J. Kinnison, during this study. Without his expert knowledge of community colleges and research methodology, and his gentle patience, this study might not have been completed.

Abstract of a Major Applied Research Project Presented
to Nova University in Partial Fulfillment of the
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The purpose of the Major Applied Research Project was to develop a cost-effective model that California community college districts can use to compare their costs with those of similar districts. The model was developed using adaptations of microcomputer software and tested using data from the Chancellor's Office, California Community Colleges, and Marin Community College District (MCCD). It can be used in California by the seventy community college districts, including MCCD, to establish normative cost and budget guidelines. These guidelines can assist them in making selective and rational budget decisions, including cuts in costs.

Five basic research questions were asked in this study. They were:

1. What information regarding community college

costs and comparative-cost models was available in the literature?

2. What cost-effective model could be designed that would allow California community college districts to compare their costs with those of similar districts?

3. What adaptations of microcomputer software were needed to develop the model?

4. What data about California Community Colleges and MCCD were needed to test the model?

5. What process could be used to apply the model?

Five procedures were used to answer these questions. The procedures were:

1. A thorough search of the literature on community college costs and comparative-cost models was conducted.

2. Information identified through the search was studied.

3. State information, including recent research conducted by the Chancellor's Office, California Community Colleges, was studied.

4. Local MCCD information was studied.

5. Using microcomputer and software technology, and the most appropriate data available, a cost-effective model was developed and tested.

Based on the results of this study, conclusions were drawn, and recommendations were made. The recommendations were related to (1) MCCD, (2) California community college districts, and (3) community college districts in other states.

Conclusions drawn for MCCD were:

1. Compared with similar districts in 1982-83, MCCD exhibited wider differences in its ratios to total operating costs for costs of Instruction and Instructional Services, and Maintenance and Operations, than it exhibited in its ratios to total operating costs for costs of Student Services, and General Services.

2. Compared with similar districts in 1982-83, MCCD exhibited a 14 to 21 percent smaller ratio of Average Daily Attendance (ADA) to Full Time Equivalent Faculty (FTEF), which may have influenced MCCD's cost of Instruction and Instructional Services.

3. MCCD experienced a .71 percent change in ADA from 1977-78 to 1982-83, while similar districts experienced a 9 to 10 percent change, which may have decreased or increased similar districts' costs compared with MCCD's costs of Instruction and Instructional Services in 1982-83.

4. Compared with similar districts in 1982-83, MCCD exhibited a 2 to 28 percent larger ratio of Assignable Square Feet (ASF) to ADA, which may have influenced MCCD's cost of Maintenance and Operations.

5. For 1982-83, 1983-84, and 1984-85, MCCD exhibited increasingly smaller ratios of its total operating costs for costs of Student Services than similar districts exhibited in 1982-83.

Based on these conclusions, recommendations are made to Otto Roemmich, consultant to the MCCD Board of Trustees during 1984-85. It is recommended that he consider using the information gained in this study to develop normative cost and budget guidelines for MCCD. Once developed, these guidelines can be used in budget-related bargaining with interest groups and in making budget recommendations to the Board of Trustees. It is recommended to the incoming MCCD president, Myrna R. Miller, that she consider applying the model on an annual basis.

Conclusions drawn for California community college districts were:

1. The model developed in this Major Applied Research Project can be used by California community college districts to compare their costs with similar districts on an annual basis.

2. The model will be cost effective to use.

3. The model can be applied by following the five-step process used in this study to test the model.

Based on these conclusions, it is recommended that the chief executive officers of the seventy California community college districts consider using the model developed in this study to compare their costs with those of similar districts on an annual basis.

The conclusion drawn for community college districts in other states was that, if consistently-grouped statewide data are available, community college districts in other states can use database management software and microcomputers to adapt the cost-effective model developed in this study to compare their costs. Based on this conclusion, it is recommended that community college districts in other states consider adapting the cost-effective model developed in this study, using their own states' costs and characteristics data, so they can use the adapted model to compare their costs with those of similar districts.

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Chapter 1

INTRODUCTION

In recent years, community colleges throughout the United States have experienced what Wattenbarger (1978:61-62) has called the "dilemma of reduced resources." As early as 1978, he described this relatively new phenomenon and the impact it would have on planning and budgeting.

> Recently institutions have encountered a dilemma of reduced resources, caused by two major factors: first, a reduced or static enrollment, which provides less money to the college; second, a reduced real income resulting from inflation, increased costs of operation, and/or increased costs of basic items such as utilities, maintenance, and interest charges. These reductions result in the need to approach budget development on an entirely new basis. The process of taking last year's budget and adding an anticipated surplus in order to produce a new budget is no longer adequate. A more rigorous planning process must be instituted . . . Examination of . . . cost effectiveness provides more decision-making information than was available to the college in the past.

Fiscal problems remain one of the major issues facing community colleges throughout the 1980's. Arthur M. Cohen (1983:x), in identifying issues for community college leaders in a "new era," discussed these problems within the thirty-year context of the community college movement.

> Fiscal problems are not new; they merely have changed complexion. In the 1960s it was necessary to find money to build new colleges, hence the acquisition of capital funds was the issue. In the 1970s contracts negotiated through collective bargaining led to sizable salary increases for the staff, and funds had to be found to provide for that. The limitations put on enrollments in the 1980s have led to shifting priorities within the institution . . . .

In California, community colleges faced the same fiscal problems as those in other states. However, their problems were compounded by the impact of Proposition 13, which became effective in 1978. Prior to 1978, California Community Colleges received about 55 percent of their total revenues from local property taxes, with the tax rate--within limits--under the local control of each district's board of trustees, according to Gooder (1984:1/2). In 1982-83, community colleges statewide received 28 percent of their funding from local property tax revenue. Significantly, these funds were no longer locally controlled and, further, the state took these local funds into account when it made its annual appropriation to community colleges from state revenues. According to Gooder (1984:1/5) in a report for the Chancellor's Office, California Community Colleges, "no public institution was as profoundly affected by that initiative as was the community college." Gooder (1984:1/5-6) continued:

> Prior to June of 1978, the community colleges were a system of locally-controlled, relatively autonomous college districts. Each had a local property tax which, within limits, could be adjusted to meet local needs as locally-elected trustees saw them. As a system, they received more than half their support from the local property tax. After the vote in 1978, the colleges became dependent upon the State for about three-fourths of their funding. Local districts no longer had control over their own revenues even though they still controlled their expenditures. Even if there had not been other concurrent changes (a shifting public attitude away from increased access and diversified services, a growing concern over the quality of service and performance, increased uncertainty over the mission and role of the colleges, a bitter controversy over fees), Proposition 13 would

have resulted in a basic and fundamental change for the California Community Colleges.

During the period following the California taxpayers' "revolt" in 1978, community colleges received significantly lower levels of support from the state than other segments of public education. In April of 1984, the Director of the California Postsecondary Education Commission pointed out that, since 1979, the community colleges had lost 13.2 percent of total apportionments as measured in constant dollars and approximately twice that percentage in terms of their purchasing power per student (Gooder, 1984:1/7). Given increased costs of salaries and fringe benefits negotiated through collective bargaining, higher costs of utilities and legal fees, and other operating costs, many districts used reserves to balance their budgets without cutting programs and services. Some districts no longer had reserves and were experiencing a combination of increasing costs, declining resources, and declining student enrollments. They were being forced, year after year, to make significant cuts in their total operating costs. Every community college district in the state was affected.

Marin Community College District (MCCD) was illustrative. For the first time in its fifty-eight-year history, MCCD laid off full-time tenured instructors and counselors in order to balance its 1984-85 budget. In the years ahead, it was a near certainty that MCCD would need to make further cuts to maintain a balanced budget. From 1981-82 to 1984-85, MCCD experienced a 22 percent decline in average-daily-attendance (ADA) of credit and non-credit enrollment. The prognosis was that, because of the demographics of Marin County's population and other factors, student enrollment as measured by ADA would continue to decline in the foreseeable future. The prognosis also was that the cost of meeting the needs of each student would continue to increase and the total funds provided by the State of California would be inadequate to meet those costs. The impact of increased costs and inadequate funding was that MCCD would need to make further cuts to maintain a balanced budget.

In June of 1985, MCCD's administration developed a tentative 1985-86 budget for Board approval. The Board would be asked to approve a final budget in August. The major portion of the budget was composed of categories that could not be cut for 1985-86, either because of legal time requirements or because they represented previously committed fixed costs. The amount of reductions from total operating costs in the previous year was approximately 18 percent of that portion of the budget in which reductions were possible.

Yet no agreement existed among the MCCD Board of Trustees, administrators, instructors, counselors, and other staff as to how, or in which major categories of activities, those cuts should be made. Some interest groups proposed that one of the District's two campuses be closed, a politically charged proposal that historically the Board had rejected. Other interest groups proposed that no further cuts be made in the instructional program, regardless of the proportion of the budget currently spent on that category. MCCD spent more than the legally-required 50 percent of state apportionment for costs of instruction for 1984-85. And the faculty union and MCCD recently settled a lawsuit that awarded faculty a 10 percent average increase on the salary schedule, effective retroactively to November 15, 1984.

Individual trustees stated publicly that they no longer wished the Board to approve across-the-board budget cuts. They appeared to agree with Gooder (1984:3/5) that "an appropriate and rational balance among instructional and support activities" was desirable. Their concern seemed to be that, if selective cuts among instructional and support activities were made with little or no objective guidelines used, interest-group bargaining could lead MCCD to make inappropriate and irrational cuts.

For these reasons, in December of 1984, Otto Roemmich requested staff to conduct a study that would yield information regarding MCCD's costs compared with similar community college districts. Roemmich was serving as a consultant to the MCCD Board of Trustees for 1984-85, while a new chief executive officer was being selected. Quick response to Roemmich's request was not possible because existing models for conducting comparative-cost studies required a significant investment of staff time in collecting and analyzing massive amounts of data. At MCCD, the staff time, the comparative data, or funds to commission a study were not available within the time limitations. Yet the consultant wished to develop some normative guidelines that he could use in budget-related bargaining with interest groups, and in making 1985-86 budget recommendations to the Board of Trustees. He also wished to provide the incoming president with comparative-cost information so that he or she could develop normative guidelines if desired. The consultant believed that a model for comparing costs could be useful, not only to MCCD, but also to the other sixty-nine community college districts in California.

The purpose of this study was to develop a cost-effective model that California community college districts can use to compare their costs with those of similar districts. The model can be used in California by the seventy community college districts, including MCCD, to establish normative cost and budget guidelines. These guidelines can assist them in making selective and rational budget decisions, including cuts in costs.

Background and Significance

Colleges that have experienced financial shortfalls have responded in varying ways to their predicament.

Mortimer and Taylor (1984:72) recently described strategies being used by the four-year sector of higher education.

> Fundamentally, budget strategies under conditions of decline assume either an across-the-board or a selective focus, and they employ attrition or decremental budget cuts to compensate for the shortfall. In fact, institutions in financial difficulty often employ some combinations of these strategies, whether simultaneously or sequentially.

The authors recognized the appeal of across-the-board reductions. Across-the-board reductions were easier to apply, appeared more humanitarian and democratic, and caused relatively less acrimony than selective cuts. For modest, temporary budget shortfalls, these same authors believed that an across-the-board approach might be an appropriate strategy. However, they also recognized that repeated and major across-the-board cuts ultimately could be destructive to the institution. The approach assumed the budget was distributed equitably and that equal cuts would produce equal effects among all units. Mortimer and Taylor (1984:72) said "In fact, institutional priorities change, and allocations should change accordingly."

However, establishing selective program priorities was difficult and often distressing. According to Morgan (1984:6), two basic strategies for making selective resource or reallocation decisions were (1) rational calculation and (2) marketing interaction. Rational calculation encompassed the notion that resource allocation decisions could be made best "by relatively few individuals using an intellectual calculus for collecting and analyzing relatively objective information." (Morgan, 1984:6) According to this author, the basic premise of market interaction was that

> widely dispersed decisions arrived at through market or political interaction produce results that satisfy the most people. Interest-group bargaining and various competitive market strategies involving the restructuring of incentives flow from these premises.

In an apparent response to what Wattenbarger (1978:62) called the "dilemma of reduced resources," higher education faculty became increasingly interested in how colleges expended their funds. In 1980, the National Education Association (1980:5) issued a research memo that described this heightened interest.

> As increasing numbers of higher education institutions are having to face decisions about conditions that could lead to financial distress, faculty have reason for a greater interest in the way in which institutions expend their financial resources. The outlook for continuing declines in the 18-to-24 age group accompanying extremely high levels of inflation makes it necessary for every institution to direct greater attention to the use of its resources.

Kozitza (1982:13) developed a "fair and equitable budget process" that appeared to incorporate market interaction in that it was designed to involve and satisfy the most people--faculty and staff--within the college district. The process was a modified Delphi technique that Kozitza (1982:1-3) said "improved understanding and communication." Kozitza, who was formerly chief fiscal officer for another California community college district, recently was appointed chief fiscal officer of MCCD.

Leslie (1984:94) presented a paper to university faculty in which he concluded that, based on data collected in a study of institutions of higher education in California, a clear-cut pattern emerged regarding institutional response to fiscal stress.

> In early stages of decline, institutional actions are highly political; above all they seem to be aimed at keeping interest-group reactivity at a low level. However, as fiscal conditions worsen, more traditionally rational approaches begin to appear and, by the time the crisis truly arrives, rational strategies of high reactivity are commonplace. It seems clear that highly rational reactive strategies become politically feasible when conditions become desperate, but not much before.

Balderston (1974:227) argued that selective strategies could not work without both rational calculations and market interaction. Although he did not use those terms, he identified four requirements that were related to those two concepts for colleges that decided to use selective strategies in reducing budgets. Requirements he mentioned were

> (1) the technical capability to analyze costs, interactions, and goal contributions of programs, and access to comparative data to buttress the findings; (2) a way of joining credible and expert academic judgments with fiscal information; (3) an institutional process that meets conditions of fairness; and (4) a quality and range of academic and administrative leadership that can reach and enforce decisions without losing the ability to function in the future.

Lombardi (1973:77) agreed that, without knowledge of costs, not much sense could be made out of a possible resolution of a community college's financial crisis. Lombardi (1973:80-81) suggested

> The wide differences between districts within a state or within a multicampus district should be analyzed carefully by administrators. Where costs are consistently higher than average, administrators have a

> responsibility to justify the differences on the basis of quality or special circumstance . . . .

A report of a study recently published by the Chancellor's Office, California Community Colleges (Gooder, 1984), also recognized the value of rational information regarding comparable costs for activities engaged in by community colleges. The study was known as the Gooder study because Glenn G. Gooder, the primary researcher, served as consultant to the project team. In confirming the need for comparison among districts, Gooder (1984:3/7) stated

> Although not bound by the practices of others, no district can operate in a vacuum. Comparisons serve as guidelines and as a form of evaluation. In many cases, local trustees make far-reaching decisions on the basis of comparisons with other districts.

Yet models for comparison have not been well developed. Those models that are available require a significant investment of resources that districts in financial crisis can not afford. Nova University (1983:79-82), in its Governance and Management Study Guide, expressed the problem.

> Chief executive officers and boards of trustees have resisted moves to quantify and compare the relative financial performance of their institutions, so much so that no single model for comparison exists today. The work of NCHEMS (National Center for Higher Education Management Systems) comes close to providing standards for comparison in this area. However, as useful as NCHEMS products and techniques are, they are useful to only that limited set of institutions willing to invest the time of staff members and to pay the costs of collecting and analyzing massive amounts of data.

Wattenbarger (1985:65), MARP advisor, national lecturer for Nova University's Center for Higher Education, and director of the Institute of Higher Education at the University of Florida, recently identified seven questions that he believed needed community college research data. One of these questions was, "What are the most appropriate ratios for expenditures by budget classifications?" That question identified one of the needs addressed by this study. This study's contribution to the literature was a model that can be used to answer Wattenbarger's question for California Community Colleges, the largest system of community colleges in the nation.

Cost-effective comparative-cost studies can assist chief executive officers to recommend, and boards of trustees to approve, budget decisions that are selective and rational. Normative cost and budget guidelines also can assist them in bargaining with interest groups. However, Wattenbarger and Cage (1974:53) cautioned that "while cost studies are helpful to explain and justify budgetary demands, judgment is an important part of the process." They appeared to agree with Balderston's (1974:226) statement that "credible and expert academic judgments" must be joined with fiscal information.

The purpose of this study was to develop a cost-effective model that California community college districts can use to compare their costs with those of similar districts. The model was developed using adaptations of microcomputer software and was tested using data from the Chancellor's Office, California Community Colleges, and

Marin Community College District (MCCD). The seventy community college districts in California, including MCCD, can use the model to establish normative cost and budget guidelines. These guidelines can assist them in making selective and rational budget decisions, including cuts in costs.

Major Issues and Research Questions

Three major issues surrounded the development of a model that California community college districts can use to compare their costs with those of similar districts. One issue was the extent to which categories of data regarding characteristics and costs of California community college districts were grouped and reported consistently in the literature. A second issue was the extent to which factors influencing differences in costs of community college districts had been identified. A third issue was the extent to which it was possible to adapt existing database management software so it could manage the data needed to develop and test the model.

An investigation of the findings from the Gooder (1984) study indicated that the first two issues had been resolved. The study report indicated that district characteristic and cost data for California community college districts were reported consistently, in the composite, to the Chancellor's Office. The report (Gooder, 1984:5) also indicated that these data could be grouped by four major categories of activities. The report (Gooder, 1984:5/3-10) also identified more than ten factors that were statistically shown, by multiple regressions, to influence differences in costs of California community college districts. Three factors were found to influence differences in total operating costs. More than seven factors were found to influence differences in costs within one or more of four major categories of activities. The ten factors that were found to exert the strongest influences were used in this study. The Gooder research team statistically tested a number of other factors that were found not to influence differences in costs.

The third issue was resolved by hands-on experimentation with dBASE III software that had been installed on an IBM PC XT. The software was able to manage the more than 1300 pieces of data that were needed to develop and test the model.

The purpose of this study was different from the purpose of the Gooder (1984) study. The purpose of the Gooder study was to develop a plan for implementing a differential cost funding system for the California Community Colleges. Nonetheless, information reported from the Gooder study was essential to this study. Building on the Gooder research, five research questions were answered in this study:

1. What information regarding community college costs and comparative-cost models was available in the literature?

2. What cost-effective model could be designed that would allow California community college districts to compare their costs with those of similar districts?

3. What adaptations of microcomputer software were needed to develop the model?

4. What data about California Community Colleges and MCCD were needed to test the model?

5. What process could be used to apply the model?

Definitions of Terms

Terms that might be ambiguous or that required special use were defined for this study.

Ascending order, in dBASE III software, meant ordered from the lowest to the highest value (for example, A to Z or 0 to 9). Ascending order was by ASCII value (Ashton Tate, 1984:G/1).

ASCII was an acronym for American Standard Code for Information Interchange. It was a seven-bit code that defined 128 standard characters. Characters included control characters, letters, numbers, and symbols (Ashton Tate, 1984:G/1).

Assignable square feet (ASF) was the number of square feet of assignable space contained in a community college district's physical plant.

Average daily attendance (ADA) was the unit used as the basis for computing the state's annual apportionment for California community college districts. At the time of this study, 525 hours of attendance in approved courses equaled one ADA (Gooder, 1984:B/1).

Categories of activities referred to the aggregation of thirty-three budget and expenditure activity code numbers into four categories of activities performed by the California Community Colleges. These four categories were: Instruction and Instructional Services, Student Services, Maintenance and Operations, and General Services.

Database file, in dBASE III software, is a relational or flat file: a table with rows and columns. Each row is called a record, and each column is called a field. A database file was developed for California community college districts. It consisted of sixteen fields (columns), and seventy records (rows). See computer printout, Appendix A. The file stored character data in fields and numeric data in records (Ashton Tate, 1984:2/3).

Data element was an element that defined data that either was related to a district characteristic (such as district ADA), or a district cost (such as ratio for cost). Depending on the kind of data that the data element defined, the unit of measurement might be a ratio (as in ratio for cost of Instruction and Instructional Services) or a number (as in district ADA). When a data element also was a field, the terms data element and field were used interchangeably.

When a data element also was a factor, the terms data element and factor were used interchangeably.

Data entry was the entering of data regarding district characteristics and district costs manually into the database file.

Database management system, the dBASE III system, provided the capability to cross-reference between the seventy records of the California community college districts electronically.

dBASE III was a sophisticated software program produced by Ashton-Tate for managing data. It was selected for use in this study and installed on an IBM XT microcomputer.

Factor was a circumstance or condition that brought about or influenced a certain result. For instance, previous research indicated that two major factors influenced total operating costs of California community college districts: (1) district wealth, as measured by revenue per ADA, and (2) size, as measured by district ADA, and average ADA of colleges within the district.

Field, in dBASE III software, corresponded to a column in a paper database of columns and rows (Ashton Tate, 1984:G/3). Sixteen fields were created that were common to all seventy records. See computer printout, Appendix A.

Full-time enrollment meant the number of students enrolled in 12 units or more.

Full-time-equivalent faculty (FTEF) was the sum of the number of full-time credit and non-credit faculty, and the full-time equivalent of all credit and non-credit part-time faculty, in instructional programs that generated state apportionment for ADA.

General Services was the major category of activities that encompassed planning and policymaking; and general institutional support services, including fiscal operations, general administrative services, logistical services, staff services, community relations, and retired noninstructional staff benefits in California Community Colleges. General Services budget and expenditure activity codes were numbered 6600 and 6700 (Gooder, 1984:5/2).

Instruction and Instructional Services was the major category of activities that encompassed instructional activities; instructional support, including academic administration, and courses and curriculum development; and instructional services, including learning center, library, media, museums, and galleries in California Community Colleges. Instruction and Instructional Services budget and expenditure activity codes were numbered 0100-5300, 6000, and 6100 (Gooder, 1984:5/2).

Key field was a field by which the seventy records were sorted, in ascending order (Ashton Tate, 1984:G/4). Fifteen of the sixteen fields were sorted, printed out, and studied. See computer printouts, Appendices B-P.

Maintenance and Operations was the major category of activities that encompassed operations and maintenance of plant in California Community Colleges. Maintenance and Operations budget and expenditure activity codes were numbered 6500 (Gooder, 1984:5/2).

Ratio for cost (of Instruction and Instructional Services, Student Services, Maintenance and Operations, or General Services) meant the ratio to total operating costs of a California community college district for the cost of one of the four major categories of activities.

Record, in dBASE III software, corresponded to a row in a paper database of columns and rows (Ashton Tate, 1984:G/3). Seventy records were created that contained character data, and numeric characteristic and cost data, for each of the California community college districts.

Revenue per average daily attendance meant revenue generated from state apportionment per unit of credit and non-credit ADA. At the time of this study, California paid different rates for credit and non-credit ADA, and hours of apprenticeship training. It also paid different rates for each of these three kinds of instruction to each of the seventy districts, depending on four factors:

1. relative wealth of the district in terms of the modified assessed valuation per ADA before Proposition 13;

2. tax rates that were in place in 1978 in individual districts;

3. responsibilities for the adult education function within the district; and

4. relative growth or decline in district population and enrollment from 1977-78 to 1982-83.

For 1982-83, revenue per ADA for the seventy districts ranged from $1443 to $4153. The statewide median was $1894.50.

Sorting a file on key fields, in dBASE III software, meant that, upon command, records (rows) in the database file were ordered numerically by the specified key fields. Records were sorted in ascending, or ASCII, order (Ashton Tate, 1984:4/130).

Student Services was the major category of activities that encompassed admissions and records; counseling and guidance; and other student services, including student personnel administration, financial aid administration, health services, housing services, student transportation, handicapped services, job placement services, and other services in California Community Colleges. Student Services budget and expenditure activity codes were 6200, 6300, and 6400 (Gooder, 1984:5/2).

Total operating costs meant general fund expenditures associated with operating the community college district. Total operating costs included budget and expenditure activity codes 0100 through 5300 and 6000 through 6700. They did not include costs of categorically-funded programs such as Educational Opportunity Programs and

Services and Handicapped Students Programs and Services, or Community Services, Ancillary Services, Auxiliary Operations, Capital Outlay, Debt Service, or Transfers.

Weekly student contact hours (WSCH) were the number of teaching hours per week and the average number of students per class, the product of which equaled the weekly student contact hours. In California, an attendance factor then was used to convert WSCH to ADA.

Workload measures were quantity indicators by which the volume of the various activities of community colleges was measured. At the time of this study, instructional volume was measured by ADA in California Community Colleges (Gooder, 1984:B/1).

Limitations of the Study

This study made use of two sets of data in the development and testing of a comparative-cost model. The two sets were (1) California community college districts' 1982-83 cost and characteristic data as reported to the legislature by the Chancellor's Office in the Gooder (1984) report, and (2) 1983-84 and 1984-85 cost and budget data for MCCD as reported by MCCD's acting chief fiscal officer in December of 1984.

Data used in the Gooder (1984) study were submitted by the seventy districts to the Chancellor's Office through five reports. The five reports were (1) the General Fund Expenditures by Activities Report, (2) the Course Classification Report, (3) the Course Activity Measures Report, (4) the Staff Data Report, and (5) the Attendance Report. According to project staff (Gooder, 1984:4/1), integrating the data for purposes of that study proved to be "a difficult task." As the preliminary analysis was being completed, the project staff found a number of inconsistencies within the different reports that were difficult to reconcile. Site visits were made to a number of campuses. Several factors were identified that appeared to contribute to inconsistencies among the reports. However, the study (Gooder, 1984:4/4) concluded that "in the composite, attendance and budget and expenditure data are accurate."

The 1982-83 data used in this study were reported in an appendix to the Gooder (1984) study on pages E 1-11, except for revenue data that were reported on page 5/26. Two sets of district ADA data were reported in the Gooder (1984) study. While no clear explanation was given for the two sets of different data, it was assumed that one was an amended set. It might have been amended after the research staff conducted its site visits. District ADA data used in the current study were those reported on pages E 1-2 in an appendix to that study.

It was acknowledged in the Gooder (1984) study and in this study that there were limitations in the California data. Nonetheless, for purposes of this study, they were the most appropriate and accurate data available. In fact, it would not have been possible to develop the comparative-cost model without using the data reported in the Gooder study.

Assumptions

The first assumption of this study was that the comparative-cost model developed would yield information that could be used in the development of normative cost and budget guidelines. The second and related assumption was that the model would be most useful to community college districts if it required a relatively simple methodology (rankings, ranges, averages, trends, percentages, and ratios) for yielding comparative-cost information.

A third assumption of this study was that comparison groups composed of three similar districts were sufficient in number to develop information that would be useful in comparisons of costs. Depending on their characteristics, some districts that use the model may be able to find a larger number of similar districts. A fourth assumption of this study was that districts that were "similar" were similar on two major factors. Those two factors, the only ones found in the Gooder (1984) study to influence differences in total operating costs of California community college districts, were (1) district wealth, as measured by revenue per ADA, and (2) size, as measured by district ADA, and average ADA of colleges within multi-college districts. By matching districts as closely as possible on these two factors, it was assumed that the influence of these two factors on differences in costs would be minimized. Any differences in costs between districts that were closely matched on these two factors, then, might be due to the influence of other factors.

The purpose of this study was to develop a cost-effective model that California community college districts can use to compare their costs with those of similar districts. The research questions, definitions, limitations, and assumptions were developed. As the first step in conducting the study, the related literature was reviewed.

Chapter 2

REVIEW OF RELATED LITERATURE

The literature was reviewed for information regarding community colleges, two-year colleges, junior colleges, operating expenses, cost models, and cost studies. It revealed three kinds of information related to this study. Kinds of information revealed were (1) approaches community colleges could take in comparing costs at the institutional level, (2) historical ratios-for-costs by major categories of expenditures to total operating costs, and (3) factors believed or known to influence differences in costs. These three kinds of information provided the conceptual base for this study.

Comparative-Cost Approaches

The literature revealed two approaches community colleges could take in comparing costs at the institutional level. One approach was cost-per-unit. The second approach was ratios-for-costs by major categories of activities.

Cost-Per-Unit Approach

Unit cost studies were used by community colleges that wished to compare total operating costs of their operations, or some portion thereof, as they related to a specific workload measure or measures. The workload measure might be average daily attendance (ADA), student headcount, assignable square feet (ASF), full-time-equivalent faculty (FTEF), full-time-equivalent student (FTES), credit hours, weekly-student-contact hours (WSCH), or some other measure.

According to Jacobs (1981:10-11), "the college administration should provide, on a continuing basis, unit cost studies with an analysis so that you (trustees) understand where costs are relative to other community colleges and to past years." As early as 1972, Sims (1972:2) proposed that unit cost studies might become "an integral part of the funding process for community junior colleges." He believed that cost studies could assist in determining appropriate funding levels for a college, a statewide system of colleges, or of functions within a college. Sims (1972:18-19) proposed that

> Unit cost studies may be developed as a pure system of either: (a) an accounting approach to quantify and assign costs to pre-determined cost centers which are usually sectors in the accounting system; this approach is related to cost accounting, (b) a level-of-effort approach which is an attempt to qualify in a broad sense the faculty effort within cost centers by a predetermined set of functions such as instruction, research, counseling, and administration, (c) a cost funding approach advocated by WICHE-NCHEMS which draws from both (a) and (b) to cost a variety of activities having a unique objective. The accounting approach, by its tangible nature, tends to be the easier method to achieve on a compatible basis on such a broad scale as a statewide cost study. A combination of the two approaches should be considered at the institutional level for participatory interest and responsibility among the total staff. Work on the combination approach seems to be a first step in the inductive evolution of a sophisticated method toward really measuring the output of higher education. The relationship between costs and productivity within a cost center is the design essential to demonstrating

> requirements and effective use of resources. The indices between products and services to assignable costs is the design key.

According to Lombardi (1973), unit cost was generally derived by dividing total operating costs by the number of full-time-equivalent students (FTES). Less frequently, it was determined by cost per credit hour--total operating costs divided by the number of credit hours taken by students. In some cases, the measure might be weekly student contact hours (WSCH). Because of the usual exclusion of certain expenditures, such as federal funds for student financial aid and self-supporting auxiliary services, Lombardi (1973:78) found that the total cost of education "is always higher than the current expense of instruction by a margin of approximately 10 percent."

At the time of this study, California community college districts were funded on the basis of one workload measure: average daily attendance, or ADA. According to Breneman and Nelson (1981:192), California was the only state that still used this measure. Because that single measure did not reflect the cost of delivering community college instruction and services, in 1983 the California legislature directed the Chancellor's Office to conduct a study and provide a report by December 1984 on differential cost funding, i.e., funding based on more than one unit or workload measure. The Gooder (1984:5/3-11) report proposed three additional workload measures. They were (1) student headcount for Student Services, (2) assignable square feet for Maintenance and Operations, and (3) full-time-equivalent faculty for General Services. Report staff also proposed replacing ADA as the workload measure for Instruction and Instructional Services with full-time-equivalent students, or FTES.

It appeared that the utility of the per-unit approach largely depended on the extent to which the units being compared were similar, and the levels of funding for those units were similar, for those community college districts that wished to compare costs. In California Community Colleges, districts received different levels of revenue per ADA, as defined in Definitions of Terms. According to Bowen (1980:26), the

> costs per student unit for individual colleges and universities are determined by the amount of money they can raise for educational purposes relative to the number of students they are serving.

In other words, Bowen (1980) found that costs per unit were determined by revenue per unit. A California community college district's total operating costs per ADA, then, likely would be the same as its total operating revenue per ADA.

Ratios-for-Costs Approach

Studies that sought information about ratios for costs by major categories of activities to total operating costs was a second approach community colleges could take in comparing costs. According to Wattenbarger (1985:64), "studies related to analysis of budgets by categories are often carried out in order to provide normative guidance to college presidents." Wattenbarger (1985:64) continued with these comments

> Often these ratios are so dependent upon definitions for the various categories (e.g., What should be included as administrative costs? What should be a part of academic support?) that comparative analyses are not practical. Community college administrators should be wary of attempts to force any single institution to fit into the resulting descriptions of the medians. On the other hand, to determine in which quartile an institution falls relative to administrative costs compared with similar colleges might be a basis for better allocation of funds within that community college.

A ratios-for-costs by major categories approach depended on consistent groupings of costs, and consistent reporting of cost and characteristic data by those groupings or categories. In 1972, the National Center for Higher Education Management Systems (NCHEMS) published the first edition of a "program" classification structure that defined major categories of activities, or programs (Collier, 1978:1). The development of the structure, in part, was an attempt to make comparative analyses more practical. A program, or major category of activities, was defined as an aggregation of activities serving a common set of objectives. Collier (1978:1) stated,

> Since its introduction, the Program Classification Structure, or PCS, has been either adopted directly or adapted for special purposes by hundreds of higher-education institutions, by many state-level planning agencies, by most federal-level educational-planning agencies, and by institutions in several foreign countries.

PCS served as both a common language and as a starting point for "program-oriented" planning and management. Many colleges participated in the use of PCS through completion of annual Higher Education General Information Surveys (HEGIS) that, among other purposes, provided financial statistics of institutions of higher education to the federal government (Allen, 1980:vii).

In 1978, a second edition of PCS was published that revised the earlier program classification structure. The revised structure identified nine major programs, or categories of activities, for postsecondary education. They were (1) Instruction, (2) Research, (3) Public Service, (4) Academic Support, (5) Student Services, (6) Institutional Administration, (7) Physical Plant Operations, (8) Student Financial Support, and (9) Independent Operations. For each of the nine programs, the classification structure was designed to allow for two lower levels of disaggregation. These levels were (1) subprograms, and (2) types of activities (Collier, 1978:3-5).

A search of the literature revealed that many community colleges did not use the nine major categories defined by WICHE. Illinois community colleges used eight categories that were (1) Instruction, (2) Academic Administration and Planning, (3) Learning Resources, (4) Student Services, (5) Data Processing, (6) General Administration, (7) Auxiliary Services, and (8) General Institutional (Illinois Community College Board, 1983:8). Wattenbarger and Cage (1974:56) identified seven categories that community colleges used. These were (1) Instructional Salaries, (2) Operation and Maintenance of Facilities, (3) General Administration, (4) Supportive Instructional Costs, (5) Student Personnel Services, (6) Instructional Resources, and (7) Auxiliary Services.

Kentucky community colleges (University of Kentucky Community College System, 1984:64-65) used the six categories of (1) Instruction, (2) Administration, (3) Maintenance and Operations of Physical Facilities, (4) Library, (5) Community Service Education, and (6) Student Activities. Since the category of Student Services was not identified for Kentucky community colleges, it could be hypothesized that costs of Student Services were included in costs of Instruction. The Washington State Board for Community College Education (1978:1), which employed a computer-driven budget model, developed five categories of activities for community colleges. They were (1) Instruction and Primary Support Services, (2) Library and Learning Resource Centers, (3) Student Services, (4) Plant Operations and Maintenance, and (5) Institutional Support.

California also did not make use of the nine major categories of activities developed by NCHEMS. The categories used in the Gooder (1984) study were aggregations of budget and expenditure activity codes from the California Community Colleges' Budget and Accounting Manual. Four categories were used uniformly and consistently throughout the study (Gooder, 1984). They were (1) Instruction and Instructional Services, (2) Student Services, (3) Maintenance and Operations, and (4) General Services. In discussing the reasons for selecting only four categories, Gooder (1984:5/1) put forward several reasons.

> First, the national trend for states using a differential funding system for allocating resources has been to simplify, rather than to expand, the number of support categories and workload measures in use. In recent years Florida has abandoned the highly detailed cost-based approach of over 50 support categories for a negotiated budget approach. Likewise, several states have narrowed the range of support categories utilized in recent years.

The ratios-for-costs approach required agreement regarding definitions of the major categories of expenditures, and data reported within those categories. The review of the literature revealed that research recently had been conducted regarding California Community Colleges in which four major categories of activities were used consistently. It also revealed that these categories were not used in other states. However, for conceptual background, information regarding historical ratios for community college costs of major categories, both within and outside of the State of California, was reported in this study.

Ratios for Costs

The National Education Association (1980:16) reported expenditures of public two-year institutions for 1976-77. The mean or average percentage expended for each of the nine NCHEMS/HEGIS programs was given as a percentage of total operating expenditures. The average expenditure percentages for those programs were (1) 51 percent for Instruction, (2) 14.3 percent for Institutional Support, (3) 11.6 percent for Operations and Maintenance of Plant, (4) 8.5 percent for Student Services, (5) 8.2 percent for Academic Support, (6) 5 percent for Scholarships and Fellowships, (7) 4.3 percent for Educational and General Mandatory Transfers, (8) 2.8 percent for Public Service, and (9) 1.2 percent for Research.

NEA (National Education Association, 1980:7) also reported that a similar analysis of the 1975-76 expenditure patterns was made and that it did not differ widely for the two years. The Association reported that, in 1975-76, total Educational and General expenditures for instruction by public two-year institutions averaged 50 percent.

The National Association of College and University Business Officers (1984:13) reported 1982-83 median percentage expenditures by public two-year colleges across the nation. Those median percentages were (1) 49 percent on the two combined NCHEMS categories, or programs, of Instruction and Research, (2) 13.9 percent on Institutional Support, (3) 11.4 percent on Plant Operation and Maintenance, (4) 8 percent on Student Services, (5) 7.7 percent on Academic Support, (6) 6.6 percent on Scholarships and Fellowships, including Pell Grants, and (7).1 percent on Public Service. No percentage was given for the ninth WICHE category of Independent Operations. Because median percentages were used, the proportions did not add to 100 percent.

The Illinois Community College Board (1983:8) reported average percentages for expenditures in 1982-83 by the thirty-eight community college districts in Illinois. Those averages were (1) 66 percent on Instruction, (2) 8 percent on Student Services, (3) 7 percent on Academic Administration and Planning, (4) 6 percent on General Administration, (5) 6 percent on General Institutional, (6) 4 percent on Learning Resources, (7) 3 percent on Data Processing, and (8) less than 1 percent on Auxiliary Services.

Wattenbarger and Cage (1974:56) gave historical information regarding ratios for costs to total operating costs.

> Historically, the major portion of the operating budget has been for instructional salaries--approximately 50 percent. The next four categories of operation and maintenance of facilities, general administration, supportive instructional costs, and student personnel services all average about 10 percent of the total. The least amount of expense was in the categories of instructional resources (5 percent) and auxiliary services (4 percent).

The University of Kentucky Community College System (1984:64-65) reported average percentages of amounts budgeted for 1982-83 by the fourteen community colleges in Kentucky. Those averages were (1) 62 percent for Instruction, (2) 15 percent for Administration, (3) 15 percent for Maintenance and Operations of Physical Facilities, (4) 6 percent for Library, (5) 2 percent for Community Service

Education, and (6) less than 1 percent for Student Activities. Since no percentage was reported for Student Services, it could be hypothesized that the average percentage budgeted for Student Services was included in Instruction.

Gooder (1984:2/18) reported average percentages for expenditures of 1982-83 operating funds, in nine categories, by the seventy community college districts in California. The averages were (1) 55.7 percent for Instructional Activities, (2) 12 percent for Maintenance and Operations, (3) 10.5 percent for General Institutional Services, (4) 6.1 percent for Instructional Support, (5) 4.1 percent for Instructional Services, (6) 3.7 percent for Counseling and Guidance. (7) 3 percent for Other Student Services, (8) 2.7 percent for Planning and Policy Making, and (9) 2.2 percent for Admissions and Records.

Three years earlier (Gooder, 1984:2/18), the average percentages had been (1) 54.5 percent for Instructional Activities, (2) 11.9 percent for Maintenance and Operations, (3) 10.2 percent for General Institutional Services, (4) 6.3 percent for Instructional Support, (5) 4.5 percent for Instructional Services, (6) 3.8 percent for Counseling and Guidance, (7) 3.3 percent for Other Student Services, (8) 3.5 percent for Planning and Policy Making, and (9) 2.1 percent for Admissions and Records.

It should be noted that these percentages for California community college district costs were averages, or means, for districts that differed greatly in size as measured by ADA.

Factors Influencing Differences in Costs

The Gooder (1984) study identified four broad categories of factors that might influence differences in community college district operating costs. The categories of factors were (1) historical, (2) size, (3) clientele, and (4) mix of resources. The literature revealed information regarding these factors.

Breneman and Nelson (1981:190) suggested that

> . . . if one or more campuses in a system is substantially larger than the rest, the use of average, rather than median, figures may provide a distorted measure of costs for the majority of campuses.

Also, Breneman and Nelson (1981:191-192) cited a study conducted by Shirley Estes Kress in 1977 in which she found an optimal size, in terms of lowest unit cost, for a California community college district.

> Economic theory suggests that average costs will fall over a certain range of activity, reflecting economies of scale, but that beyond a certain size, diseconomies enter in and average costs rise again. This relationship is enshrined in economic texts as the U-shaped average cost curve. An empirical investigation of the relationship between size and costs in the California community colleges did confirm this pattern, finding that the optimal size (in terms of lowest unit cost) for a college district in the state was 12,820 average daily attendance (ADA).

According to Lombardi (1973:79), comparisons of per unit cost must be made with caution, especially comparisons among colleges in different states because of the large number of variants that enter into the computations. Some of the variants he identified were variations among states in (1) economic resources, (2) cost of living, and (3) the unit of measurement applied to cost data.

Another factor of interest was the student/faculty ratio, known in California as ADA per full-time-equivalent faculty (FTEF). Lombardi (1973:100-101), after noting that the area of education in which the greatest expenditures occurred was in the teaching and learning process, concluded that increasing the productivity of faculty was the most important way community colleges could reduce their operating costs.

> Two major factors determine faculty productivity--the number of teaching hours per week and the average number of students per class, the product of which equals the weekly student contact hours (WSCH). This measure has more influence on the cost of instruction than any other, including instructor salaries . . . it is doubtful that nonclassroom responsibilities have any significant effect in reducing operating costs . . . Average WSCH vary from 350 to 600 or more in colleges operating under the conventional classroom pattern of instruction, though variations exist within and among colleges. Large colleges without collective-bargaining agreements may have average WSCH of 450-600, while colleges with agreements seldom have more than 400. Small colleges tend toward WSCH of 300-400 . . . When an effort is made to increase productivity, the most common method employed is to increase the size of the classes. Faculty have been less resistant to this than to an increase in their weekly hour load. When given a choice between the two, they rarely choose large hourly load. Usually this only means an average increase per instructor of from ten to twenty WSCH rather than the spectacular numbers achieved by using large classrooms.

In the Gooder (1984) study, factors in all four of the broad categories described earlier were statistically tested. Multiple regressions were used to determine the influence of a variety of factors on expenditures per average daily attendance, or ADA, of California community college districts.

Historical factors tested included (1) relative wealth in terms of the modified assessed valuation per ADA of the district before Proposition 13, (2) tax rates that were then in place in individual districts, (3) responsibilities for the adult education function within the district, and (4) the relative growth or decline in district population and enrollment from 1977-78 to 1982-83. Size-related factors that were examined included (1) total size of the district operation, and (2) average size of the colleges within the district in multi-college or multi-campus districts.

Differences in clientele dealt with the characteristics of the students served within the district. Differences in the mix of resources that the district used in meeting the needs of its students also were examined. According to project staff (Gooder, 1984:5/3), the analysis demonstrated that two important factors influenced differences in district expenditures in all four support categories.

> First, historical differences in district wealth from pre-Proposition 13 continue to contribute substantially to differences in district expenditures per unit of workload. Equalization mechanisms in recent community college finance statutes simply have not been effective in reducing historical wealth differences . . . Second, college and district size have clear implications for differences in expenditures among districts.

Four major categories of expenditures were identified in the Gooder (1984) study. They were (1) Instruction and Instructional Services, (2) Student Services, (3) Maintenance and Operations, and (4) General Services. A number of factors were tested statistically, by multiple regressions, to determine their effect on total operating costs or on costs within one or more of four major categories. Except as noted, the factors that influenced costs within one or more of the major categories demonstrated positive correlations with costs within that major category or categories.

Within the major category of Instruction and Instructional Services, six factors were identified that accounted for about 85 percent of the variation (Gooder, 1984:5/3-4). These factors were:

1. historical district wealth, which accounted for about 60 percent of the variation;

2. student/faculty ratio, which accounted for an additional 10 percent of the variation and demonstrated a negative correlation with expenditures for Instruction and Instructional Services;

3. relative growth or decline in average daily attendance from 1977-78 to 1982-83 which, due to the impact of marginal rate funding for ADA in effect since 1979, accounted for an additional 5 percent of the variation; and

4. three other factors which, in combination, accounted for an additional 10 percent of the variation.

The three other factors were (a) average load in weekly faculty contact hours for full-time instructors, which demonstrated a negative correlation to expenditures for Instruction and Instructional Services, (b) average full-time faculty salaries, and (c) the percentage of instruction taught by full-time instructors.

Relative growth and decline in district ADA were tested separately. Relative growth correlated negatively with expenditures for Instruction and Instructional Services. Relative decline also correlated negatively with expenditures for Instruction and Instructional Services.

Within the major category of Student Services, five factors were identified that accounted for 60 percent of the variations of expenditures, with little difference between whether annualized ADA or fall term enrollment were used as the workload measure (Gooder, 1984:5/7). These factors were:

1. historical district wealth, which accounted for 40 percent of the differences;

2. student financial aid recipients as a percentage of total enrollment for the fall term;

3. average college size within the district which was negatively correlated to expenditures for Student Services;

4. full-time enrollment (12 units or more) as a percentage of total enrollment for the fall term; and

5. annual non-credit ADA as a percentage of total ADA.

The second and third factors, in combination, accounted for 10 percent of the differences. Likewise, the fourth and fifth factors in combination, accounted for an additional 10 percent. Annual non-credit ADA as a percentage of total ADA demonstrated a negative correlation with Student Services expenditures.

Within the major category of Maintenance and Operations, two factors were identified that accounted for 78 percent of the variation in expenditures (Gooder, 1984:5/8-9). They were (1) historical district wealth, which accounted for more than 66 percent, and (2) assignable square feet per ADA, which accounted for an additional 12 percent. A number of other factors were used in the analysis, including the percentage of ASF in leased facilities, in pre-1969 facilities, in facilities in need of major remodeling, and in laboratory and special facilities. According to the Gooder (1984:5-9) report, "these factors in their existing form were not statistically significant in explaining differences in district maintenance expenditures per ASF." However, it was acknowledged that age, condition, and types of facilities all influenced maintenance costs.

Within the major category of General Services, three factors were identified by Gooder (1984:5/9-10) that accounted for 64 percent of the variation in expenditures. Those factors were:

1. the ratio of ADA to full-time-equivalent faculty, which accounted for 37 percent and demonstrated a negative correlation to costs of General Services;
2. the percentage of ASF in laboratory and special facilities, which accounted for an additional 14 percent and demonstrated a negative correlation to costs of General Services; and
3. historical district wealth, which acoounted for an additional 13 percent of the differences.

The search of the literature yielded no evidence of research that had been conducted regarding factors that influenced ratios for costs except when a ratios-for-costs approach was used in combination with a costs-per-unit approach. Nonetheless, costs of Instruction of approximately 50 percent were fairly consistently reported. In California, 50 percent was a legally-mandated minimum requirement for community college districts to spend on Instruction.

The National Education Association (1980:7) listed seven factors that it believed influenced differences among and between institutions in percentages spent on Instruction--the primary concern of NEA--in any given year. These factors were (1) size of institution, (2) location of institution, (3) adequacy of financial planning, (4) emphasis upon buildings and grounds, (5) emphasis upon administrative staff, (6) emphasis upon recruitment and public relations, and (7) record-keeping system.

Another factor, mentioned by Wattenbarger and Cage (1974:53), was believed to influence costs within the category of Instruction. It was the proportion of academic or college parallel programs versus the proportion of occupational or vocational-technical programs that the college offered.

> One of the first things decisionmakers must recognize is that community college course offerings and educational programs, because of their content and duration, have varied costs of operation. The major differentiation in cost is between occupational (vocational-technical) and college parallel programs; however, when business education courses are included in the occupational program category, the largest difference is found within occupational programs themselves.

According to the Gooder (1984:2/4) report, the costs of instruction for health occupations consistently were high throughout the nation. On a statewide average expenditure per ADA basis, other typically high-cost programs in California were agriculture, biological sciences, communications, humanities, and physical sciences (Gooder, 1984:5/4). Breneman and Nelson (1981:37-38) commented on the influence funding formulas had on instruction when such formulas did not take into account the differences between high-cost and low-cost programs.

> There is a growing interest in many states in the incentive effects of particular forms of state aid and the impact of budgetary formulas on costs and performance. Legislators often overlook the fact that a budgetary formula is also an incentive system, a set of prices that will be paid for rendering particular services. For example, formulas that reward enrollment increases with payments based on average rather than marginal costs will give rise to extensive recruiting efforts, since the colleges may make money on addi-

> tional enrollments. States that do not differentiate their payments according to program cost differences, paying instead a fixed sum per student regardless of program, have set in place (perhaps unintentionally) powerful incentives for a college to concentrate on low-cost programs. And when a state seeks to pay for some courses of study and not for others, it should not be surprised when the colleges redefine courses into the favored category.

Funding formulas also had an effect on what Gooder (1984:3/5) called "an appropriate and rational balance among instructional and support activities." It was at least partially due to the fact that the funding formula for California Community Colleges did not take into account the non-ADA-generating activities of the California Community Colleges (Instructional Services, Student Services, Maintenance and Operations, and General Services) that the legislature requested a study of differential cost funding which might utilize more appropriate measures for non-instructional activities.

Few citations were found in the literature for research that investigated the educational impact on students when the ratios for costs by major categories differed between similar districts. However, Wattenbarger and Cage (1974:56-57) cited a study conducted by J. E. Mathews in 1970 on the topic of certain input-output relationships in selected community colleges. Mathews found relationships between the percent of budget allocations to various functional areas and "community outputs." His research showed that a positive relationship existed between the percentage of budget allocated to student personnel services and student completions of the liberal arts program. He also found a direct relationship between the percentage of the total budget allocated to instructional salaries and the employment of college graduates in jobs related to their fields of study.

Summary

The two approaches community colleges could take in comparing costs revealed by the review of the literature were (1) costs per unit, and (2) ratios for costs. The review of the literature also revealed historical ratios for community college costs. The categories varied across the nation and, therefore, the ratios exhibited for each major category were not directly comparable among different states. However, a review of the Gooder report revealed information that was essential to this study. That information was that:

1. The activities and costs of California Community Colleges could be grouped into four major categories;

2. Three factors had been statistically shown, through multiple regressions, to influence differences in total operating costs of California community college districts; and

3. More than seven factors had been statistically shown, through multiple regressions, to influence differences in costs within one or more of four major categories of activities of California community college districts.

Chapter 3

PROCEDURES AND METHODOLOGY

The research questions for this study were addressed first by conducting a thorough search of the literature for citations regarding community colleges, two-year colleges, junior colleges, operating expenses, cost models, and cost studies. The computer-based search yielded 94 citations. Citations that were related to the research questions were examined further. The search was conducted by Information Retrieval Service at The Center for Higher Education at Nova University.

The Information Retrieval Service had access to four on-line systems, three of which were requested in the computer search of the literature for this study. One of the three on-line systems requested was Dialog Information Retrieval Service. It had more than 180 databases, including Education Resources Information Center (ERIC), Comprehensive Dissertation index, and ABI/Inform. ERIC consisted of two subfiles (1) Resources in Education that was concerned with the most significant and timely education research reports, and (2) Current Index to Journals in Education, an index to more than 700 periodicals of interest to every segment of the educational profession. ABI/Inform provided information about articles on all phases of management and administration from over 400 journals. Bibliographic Retrieval Services (BRS) was the second on-line system requested in the computer search. BRS had more than 90 databases, including School Practices Information File (SPIF). The third on-line system requested in the computer search was NEXIS, a service of Mead Data Central that allowed access to information in newspapers, magazines, wire services, newsletters, and government documents.

In addition to the literature cited in the computer-based search, the December 1984 Gooder report was studied in depth for information that was related to the research questions. Also, information regarding MCCD's costs and budgets was studied.

The first two research questions were answered by a study of the literature. The third research question was answered by a study of database management software programs for microcomputers, including hands-on experimentation with dBASE III that was installed on an IBM PC XT.

The fourth research question was answered by using California Community Colleges and MCCD data to test the model. The five sequential steps taken to test the model were (1) the database was built, (2) the comparison groups were selected, (3) costs were compared, (4) the factors that influenced differences in costs were identified, and (5) the trends were identified.

The database was built using 1982-83 characteristic and cost data for seventy California community college districts that were contained in the December 1984 Gooder report; and 1983-84 and 1984-85 cost and budget data for MCCD that were reported by the acting chief fiscal officer in December 1984. The 1982-83 data were entered manually into the adapted database management software.

Fourteen data elements were studied. Three of these data elements used to select two comparison groups were (1) district wealth, as measured by revenue per ADA, and (2) district size, as measured by district ADA, and average ADA of colleges within the district. These three factors were the only factors that had been shown statistically to influence differences in total operating costs among and between California community college districts.

Costs were compared between MCCD and each of two comparison groups. Three sets of 1982-83 ratios for costs of four major categories of activities to total operating costs were presented for purposes of comparing costs. Those three sets of ratios were (1) the ratios for MCCD, (2) the ratios for each of two comparison groups, and (3) the average of the ratios for each of two comparison groups. For each of the four major categories, the percentage-point differences between MCCD's ratio and the averages of the two comparison group ratios were calculated and presented.

Then, MCCD's ratios for costs were compared with the averages of the two comparison groups. The major categories of activities for which MCCD's cost ratio exhibited the widest differences, when compared to the two comparison groups' averages, were selected for further study. In the test of the model, two major categories were identified as exhibiting wide differences. Other districts using the model may find more or less than two categories. Based on the Gooder research, information was presented regarding factors that may have influenced MCCD's wide differences in costs of two major categories. Were another district to use the model and identify one or more major categories that exhibit wide differences in costs, it also can use the model to explore factors that may have influenced those wide differences.

The next step in testing the model was the development of three-year ratios for costs for the test district, MCCD. The 1982-83 ratios had already been developed. The 1983-84 and 1984-85 ratios were developed from expenditure and budget data provided for the four major categories of activities by MCCD's acting chief fiscal officer. These three-year sets of MCCD ratios were presented for the purpose of identifying trends.

The fifth research question was answered by describing the process that was used to test the model.

Chapter 4

PRESENTATION OF RESULTS

This study addressed the five research questions presented in Chapter 1. Study results were presented in five sections that corresponded with the questions. They were (1) community college costs and comparative cost models, (2) design of a cost-effective model for California Community Colleges, (3) adaptations of microcomputer software, (4) test of the model, and (5) process for applying the model.

Community College Costs and Comparative-Cost Models

The results of this study indicated that community colleges could choose two basic approaches in comparing costs at an institutional level. The two approaches were (1) cost-per-unit approach, and (2) ratios-for-costs by major categories approach. The cost-per-unit approach required similar units, and similar levels of funding for those units. The ratios-for-costs by major categories approach required similar major categories of activities, and consistent reporting of characteristic and cost data by those categories.

The cost-per-unit approach required similar units, and similar levels of fuhding for those units. California community college districts had similar units (ADA), but they did not generate similar levels of funding for those units. For example, in 1982-83, California's seventy districts generated revenue per ADA that ranged from $1443 to $4153. For a fuller explanation of the different levels of revenue, see the term "revenue per average daily attendance" in Definitions of Terms. For this reason, the cost-per-unit approach was determined to be an inappropriate approach for California community college districts to use in comparing costs.

The ratios-for-costs by major categories approach required similarity of major categories of activities, and consistent reporting of characteristic and cost data by those categories. The Gooder study indicated that both of these requirements were met for California community college districts. The four major categories of activities it identified were (1) Instruction and Instructional Services, (2) Student Services, (3) Maintenance and Operations, and (4) General Services. The Gooder study also provided characteristic and cost data for all seventy California community college districts for 1982-83. For these reasons, it was determined that a ratios-for-costs by major categories of activities approach was an appropriate approach for California community college districts to use in comparing costs.

Information about ratios for costs of community college activities in other states was determined to be inappropriate for use in this study because no other state used the same categories of major activities as those used by California Community Colleges. Information about percentages that California community college districts expended for nine major categories of activities in 1979-80 and 1982-83 was reported in the literature. These major categories could have been re-grouped into the four major categories used in the Gooder study. However, the percentages were reported as averages, not medians, for districts that differed greatly in size as measured by ADA. According to Breneman and Nelson (1981:190), if one or more campuses in a system were substantially larger than the rest, the use of average, rather than median, figures might provide a distorted measure of costs for the majority of campuses. Therefore, it was determined that California's average percentages were not directly useful to this study.

Design of a Cost-Effective Model

The results of this study indicated that a cost-effective model could be designed which would allow California community college districts to compare their costs with those of similar districts. The design was based on a ratios-for-costs by major categories of activities approach. The two components of the design were (1) major categories of activities, and (2) factors influencing differences in costs.

Major Categories of Activities

The results of this study indicated that little consistency was used in defining major categories of activities for community colleges throughout the nation. However, within the State of California, four major categories of activities were used consistently in previous research. Those four categories were used in the design of this model. Those categories were (1) Instruction and Instructional Services, (2) Student Services, (3) Maintenance and Operations, and (4) General Services.

Factors Influencing Differences in Costs

The results of this study indicated that, except for the Gooder study, little research had been reported that identified factors influencing differences in costs of community college activities. The two sets of factors the Gooder study identified were (1) those factors that influenced district differences in total operating costs, and (2) those factors that influenced district differences in costs within one or more of four major categories of activities.

Those factors that influenced district differences in total operating costs were (1) district wealth, as measured by revenue per ADA, and (2) size, as measured by district ADA, and average ADA of colleges within the district. In addition to these factors, seven additional factors were identified that most influenced differences in costs within one or more of four major categories of activities. One of the factors, ADA per Full-Time-Equivalent Faculty (FTEF), influenced differences in costs of two major categories. The factors that most influenced each major category were:

1. for Instruction and Instructional Services, ADA per FTEF, and percentage change in district ADA from 1977-78 to 1982-83;

2. for Student Services, student financial aid recipients as a percentage of total enrollment for the fall term, full-time enrollment as a percentage of total enrollment for the fall term, and annual non-credit ADA as a percentage of total ADA;

3. for Maintenance and Operations, assignable square feet per ADA; and

4. for General Services, ADA per FTEF, and percentage of ASF in laboratory and special facilities.

Adaptations of Microcomputer Software

Adapting the microcomputer software involved two stages. They were (1) selecting the software, and (2) designing the database structure. In the first stage, a review of database management software was conducted. From the review, performance requirements were determined. Those requirements were that the system selected must be a relational database management system; easy to use; able to manipulate at least 16 fields, at least 90 characters per record, and at least 70 records; fast in sorting fields; and able to run on an IBM PC XT microcomputer (the hardware available). dBASE III, by Ashton-Tate, met all of these requirements. It was the software system selected and installed on the microcomputer.

The database management structure then was designed for use in the model. See computer printout, Appendix A. It consisted of sixteen uniform fields (columns). Each field was named for a different data element. dBASE III limited a field name to ten characters. These data elements were (1) DISTNAME for district name, (2) DISTADA for district ADA, (3) AVECOLADA for average ADA of colleges within the district, (4) REVENUE for total revenue, (5) REVPERADA for revenue per ADA, (6) RATIOFORMO for ratio for cost of maintenance and operations to total operating costs, (7) ADAPERFTEF for ADA per FTEF, (8) RATIOFORIN for ratio for cost of instruction and instructional services to total operating costs, (9) RATIOFORSS for ratio for cost of student services to total operating costs, (10) RATIOFORGS for ratio for cost of general services to total operating costs, (11) ASFPERADA for ASF per ADA, (12) ADACHG7778 for percentage change in district ADA from 1977-78 to 1982-83, (13) PCTFINAID for student financial aid recipients as a percentage of total enrollment for the fall term, (14) PCTFULLTIM for full-time enrollment as a percentage of total enrollment for the fall term, (15) PCTNONCRED for annual non-credit ADA as a percentage of total ADA, and (16)

PCTASFLAB for percentage of assignable square feet in laboratory and special facilities. Information about whether the fields were character fields or numeric fields, the width of each field, and the number of decimals desired for numeric fields was entered manually.

Test of the Model

Using MCCD as the test case, the model was tested in five sequential steps. The steps were (1) the database was built, (2) the comparison groups were selected, (3) costs were compared, (4) factors influencing differences in costs were identified, and (5) trends were identified.

Building the Database

The two sets of data used to build the database were (1) the 1982-83 district cost and characteristic data for California community college districts that were reported in the Gooder study, and (2) 1983-84 and 1984-85 cost and budget data for MCCD that were reported by the acting chief fiscal officer at MCCD. The 1982-83 data for California community college districts were entered manually for fifteen of the sixteen fields into the seventy records.

Revenue per ADA data, as such, were not reported in the Gooder study. However, revenue per ADA data were essential to the development of this model. To calculate that ratio, a revenue per ADA field was created in the database file. The command given was to replace all "revenue per ADA" with "revenue" divided by "ADA." dBASE III calculated and automatically entered the ratio into each of the seventy records on the revenue per ADA field, the sixteenth field.

In addition to 1982-83 cost and characteristic data that were needed for all seventy California community college districts, the test of the model also required multi-year cost and budget data specific to MCCD. MCCD's acting chief fiscal officer provided expenditure data for 1983-84 and budget data for 1984-85.

After the 1982-83 data for all California community college districts had been entered into dBASE III, sort-on-field commands were given so that it sorted and printed out, on paper, in ascending order, the seventy districts as they ranked on each of the selected fields. The computer printouts of these field-by-field rankings were appended to this study and were an essential component of the model (Appendices B-P).

Once the database was built, MCCD's comparison groups were selected on the basis of similarity of (1) district wealth, as measured by revenue per ADA, and (2) size, as measured by district ADA, and average ADA of colleges within the district. A comparison group might have been selected on number of colleges or sites within the district; however, no previous research was found that demonstrated this factor as influencing differences in costs. During the test, it was determined that it was not possible to find a single group of three districts that MCCD matched closely on both district ADA, and average ADA for colleges within the district. It was possible to find three districts that MCCD matched closely on both revenue per ADA and district ADA as one comparison group. It also was possible to find another three districts that MCCD matched closely on both revenue per ADA and average ADA for colleges within the district as a second comparison group. Therefore, two comparison groups were identified for MCCD. One comparison group consisted of three districts that were most similar to MCCD on revenue per ADA and district ADA, called the district comparison group. Another comparison group consisted of three districts that were most similar to MCCD on revenue per ADA and average ADA for colleges within the district, called the college comparison group.

Selecting the Comparison Groups

The following process was used to identify the district comparison group and the college comparison group.

District comparison group. To identify the three districts that were most similar to MCCD on revenue per ADA, and district ADA, the ranked data in two computer printouts, Appendices C and D, were used. MCCD's district ADA was 7389; its revenue per ADA was $2045. A percentage was applied to MCCD's data (7389 and $2045) that identified a range of data that was similar to MCCD's. The range gradually was increased until the three districts that most closely matched MCCD on both measures were identified. The three districts that were identified as most similar to MCCD on revenue per ADA and district ADA were Chaffey, Cabrillo, and Allan Hancock. In 1982-83, all three districts were single-college districts; MCCD was a two-college district. See Table 1.

Table 1

District Comparison Group

District	Revenue Per ADA	District ADA
Marin District	$2045	7389
Chaffey District	$2001	7709
Cabrillo District	$1801	6823
Allan Hancock District	$1736	6929
Three-District Average	$1846	7154
Statewide Median	$1895	7814

The range of revenue per ADA for the district comparison group was $1736 to $2001. The three-district average was $1846, 9.7 percent smaller than MCCD's revenue per ADA. The statewide median was $1895, 7.3 percent smaller than MCCD's revenue per ADA.

The range of district ADA for the district comparison group was 6823 to 7709. The three-district average was 7154, 3.2 percent smaller than MCCD's district ADA. The statewide median was 7814, 5.8 percent larger than MCCD's district ADA.

College Comparison Group. To identify the three districts that were most similar to MCCD on revenue per ADA, and college ADA (district ADA divided by number of colleges within the district), the ranked data in two computer printouts, Appendices D and E, were used. MCCD's average ADA of colleges within the district was 3695 (7389 district ADA divided by two colleges); its revenue per ADA was $2045. A percentage was applied to MCCD's data (3695 and $2045) that identified a range of data that was similar to MCCD's. The range gradually was increased until the three districts that most closely matched MCCD on both measures were identified. The three districts that were identified as most similar to MCCD on revenue per ADA, and average ADA of colleges within the district, were San Luis Obispo, Kern, and Peralta. In 1982-83, San Luis Obispo was a single-college district; Kern was a three-college district; and Peralta was a five-college district. As noted earlier, MCCD was a two-college district. See Table 2.

The range of revenue per ADA for the college comparison group was $1892 to $2206. The three-district average was $2005, 2 percent smaller than MCCD's revenue per ADA. The statewide median was $1895, 7.3 percent smaller than MCCD's revenue per ADA.

Table 2

College Comparison Group

District	Revenue Per ADA	College ADA
Marin District	$2045	3695
San Luis Obispo District	$1918	3803
Kern District	$2206	3445
Peralta District	$1892	4059
Three-District Average	$2005	3769
Statewide Median	$1895	5855

The range of college ADA for the college comparison group was 3445 to 4059. The three-district average was 3769, 2 percent larger than MCCD's average ADA for colleges within the district. The statewide median was 5855, 58.5 percent larger than MCCD's average ADA for colleges within the district.

Summary. Using three-district averages, MCCD was more similar to the college comparison group than to the district comparison group. The three-district averages of the college comparison group data were only 2 percent different from MCCD's data on two major factors influencing district differences in total operating costs. The three-district averages of the district comparison group data were 9.7 percent different from MCCD's data on one major factor influencing district differences in total operating costs, and 3.2 percent different on a second major factor influencing district differences in total operating costs.

Comparing Costs

Using two different comparison groups, MCCD's percentages for costs were compared to three-district average percentages for costs as proportions of total operating costs for each of four categories. The categories were (1) Instruction and Instructional Services, (2) Student Services, (3) Maintenance and Operations, and (4) General Services.

Instruction and instructional services. During 1982-83, MCCD spent 66.19 percent of its total operating budget on Instruction and Instructional Services. The range of percentages for the college comparison group was from 60.53 to 65.53. The college-comparison-group average percentage was 62.35, a percentage-point difference of 3.84 between the average percentage and MCCD's percentage. MCCD spent 3.84 percentage points more for the cost of Instruction and Instructional Services than the college-comparison-group average. See computer printout, Appendix F, and Table 3.

The range of percentages for the district comparison group was from 67.56 to 69.27. The district-comparison-group average percentage was 68.63, a percentage-point difference of 2.44 between the average percentage and MCCD's percentage. MCCD spent 2.44 percentage points less for

Table 3

Ratios for Cost of Instruction
and Instructional Services

District	Ratios
Marin District	.6619:1
San Luis Obispo District	.6053:1
Kern District	.6553:1
Peralta District	.6100:1
College-Comparison-Group Average	.6235:1
Chaffey District	.6906:1
Cabrillo District	6927:1
Allan Hancock District	6756:1
District-Comparison-Group Average	.6863:1

costs of Instruction and Instructional Services than the district-comparison-group average. See computer printout, Appendix F, and Table 3.

Student services. During 1982-83, MCCD spent 7.96 percent of its total operating budget on the cost of Student Services. The range of percentages for the college comparison group was from 7.79 to 10.59. The college-comparison-group average percentage was 9.23, a percentage-point difference of 1.27 between the average percentage and MCCD's percentage. MCCD spent 1.27 percentage points less for costs of Student Services than the college-comparison-group average. See computer printout, Appendix G, and Table 4.

Table 4

Ratios for Cost of Student Services

District	Ratios
Marin District	.0796:1
San Luis Obispo District	.0779:1
Kern District	.0931:1
Peralta District	.1059:1
College-Comparison-Group Average	.0923:1
Chaffey District	.0973:1
Cabrillo District	.0820:1
Allan Hancock District	.1023:1
District-Comparison-Group Average	.0939:1

The range of percentages for the district comparison group was from 8.2 to 10.23. The district-comparison-group average was 9.39, a percentage-point difference of 1.43 between the average percentage and MCCD's percentage. MCCD spent 1.43 percentage points less for the cost of Student Services than the district-comparison-group average. See computer printout, Appendix G, and Table 4.

Maintenance and operations. During 1982-83, MCCD spent 12.32 percent of its total operating budget for

Maintenance and Operations. The range of percentages for the college comparison group was from 10.50 to 18.68. The college-comparison-group average percentage was 14.15, a percentage-point difference of 1.83 between the average percentage and MCCD's percentage. MCCD spent 1.83 percentage points less for costs of Maintenance and Operations than the college-comparison-group average. See computer printout, Appendix H, and Table 5.

Table 5

Ratios for Cost of Maintenance and Operations

District	Ratios
Marin District	.1232:1
San Luis Obispo District	.1868:1
Kern District	.1327:1
Peralta District	.1050:1
College-Comparison-Group Average	.1415:1
Chaffey District	.0507:1
Cabrillo District	.1024:1
Allan Hancock District	.1128:1
District-Comparison-Group Average	.0886:1

The range of percentages for the district comparison group was from 5.07 to 11.28. The district-comparison-group average was 8.86, a percentage-point difference of 3.46

between the average percentage and MCCD's percentage. MCCD spent 3.46 percentage points more for costs of Maintenance and Operations than the district-comparison-group average. See computer printout, Appendix H, and Table 5.

General services. During 1982-83, MCCD spent 13.53 percent of its total operating budget for General Services. The range of percentages for the college comparison group was from 11.88 to 17.91. The college-comparison-group average percentage was 14.25, a percentage-point difference of .72 between the average percentage and MCCD's percentage. MCCD spent .72 percentage points less for the cost of General Services than the college-comparison-group average. See computer printout, Appendix I, and Table 6.

The range of percentages for the district comparison group was from 10.93 to 16.19. The district-comparison-group average percentage was 13.13, a percentage-point difference of .4 between the average percentage and MCCD's percentage. MCCD spent .4 percentage points more for General Services than the district-comparison-group average. See computer printout, Appendix I, and Table 6.

Summary. When MCCD compared its ratios for costs of major activities to total operating costs with the averages of two comparison groups, MCCD exhibited the widest percentage-point differences in Instruction and Instructional Services, and Maintenance and Operations. In 1982-83, MCCD spent 3.84 percentage points more than the average

Table 6

Ratios for Cost of General Services

District	Ratios
Marin District	.1353:1
San Luis Obispo District	.1295:1
Kern District	.1188:1
Peralta District	.1791:1
College-Comparison-Group Average	.1425:1
Chaffey District	.1619:1
Cabrillo District	.1228:1
Allan Hancock District	.1093:1
District-Comparison-Group Average	.1313:1

of the college comparison group, and 2.44 percentage points less than the average of the district comparison group for the cost of Instruction and Instructional Services. In 1982-83, MCCD spent 1.83 percentage points less than the average of the college comparison group, and 3.46 percentage points more than the average of the district comparison group for the cost of Maintenance and Operations.

Identifying Factors Influencing Differences in Costs

The next step in testing the model was to identify factors that might have influenced the differences in costs within the two major categories of Instruction and Instructional Services, and Maintenance and Operations.

Instruction and instructional services. The Gooder study identified three factors that accounted for 75 percent of the variation for costs of Instruction and Instructional Services in California community college districts. These factors were:

1. district wealth, as measured by revenue per ADA, which accounted for about 60 percent of the variation;

2. student/faculty ratio, as measured by ADA per FTEF, which accounted for an additional 10 percent of the variation; and

3. relative growth or decline in average daily attendance from 1977-78 to 1982-83, as measured by percentage change in district ADA over a five-year period, which accounted for an additional 5 percent of the variation.

Districts were selected for inclusion in the two comparison groups on the basis of their match with MCCD on revenue per ADA. Therefore, no further study of this factor was necessary.

Regarding ADA per FTEF, MCCD had a ratio of ADA to FTEF of 24.16 in 1982-83. The range of ADA per FTEF for the college comparison group was from 22.51 to 35.08. The average was 29.15, a difference of 4.99 ADA per FTEF between MCCD and the college comparison group. MCCD's ratio was 21 percent smaller than the average ratio for the college comparison group. See computer printout, Appendix J, and Table 7.

Table 7

Average Daily Attendance Per Full Time Equivalent Faculty

District	ADA Per FTEF
Marin District	24.16
San Luis Obispo District	29.87
Kern District	22.51
Peralta District	35.08
College-Comparison-Group Average	29.15
Chaffey District	23.33
Cabrillo District	27.12
Allan Hancock District	31.95
District-Comparison-Group Average	27.47

The range of ADA per FTEF for the district comparison group was from 23.33 to 31.95. The average was 27.47, a difference of 3.31 ADA per FTEF between MCCD and the district comparison group. MCCD's ratio was 14 percent smaller than the average ratio for the district comparison group. See computer printout, Appendix J, and Table 7.

Regarding percentage change in district ADA, MCCD's ADA declined by .71 percent from 1977-78 to 1982-83. The range of percentage change for the college comparison group was from -6.82 to +14.86. The mid-point for the range of percentage change was +10.84, a percentage-point net difference of +10.13 between the mid-point percentage and MCCD's percentage. Two of the three similar districts had larger percentages of decline in district ADA than did MCCD. See computer printout, Appendix K, and Table 8.

Table 8

Percentage Change in District ADA
Over a Five-Year Period

District	Percentage
Marin District	-0.71
San Luis Obispo District	+14.86
Kern District	-6.82
Peralta District	-2.84
College Comparison Group Range (Mid-Point)	+10.84
Chaffey District	-17.80
Cabrillo District	+.80
Allan Hancock District	-2.27
District Comparison Group Range (Mid-Point)	-9.30

The range of percentages for the district comparison group was from -17.80 to +.80. The mid-point for the range of percentages was -9.30, a percentage point net difference of -8.59 between the mid-point percentage and MCCD's percentage. Two of the three districts had larger percentages of decline in district ADA than did MCCD. See computer printout, Appendix K, and Table 8.

Maintenance and operations. The Gooder study identified two factors that accounted for 78 percent of the variation for costs of Maintenance and Operations in California community college districts. These factors were (1) historical district wealth as measured by revenue per ADA, which accounted for more than 66 percent, and (2) assignable square feet per ADA, which accounted for an additional 12 percent. Districts were selected for inclusion in the comparison groups on the basis of their match with MCCD on revenue per ADA. Therefore, no further study of this factor was necessary.

Regarding ASF per ADA, MCCD had 55.6 ASF per ADA in 1982-83. The range of ASF per ADA for the college comparison group was from 49.6 to 63.4. The average was 54.4, a difference of 1.2 ASF per ADA between MCCD and the college comparison group. MCCD's ratio of ASF to ADA was 2 percent larger than the average ratio for the college comparison group. See computer printout, Appendix O, and Table 9.

The range of ASF per ADA for the district comparison group was from 33.9 to 48.2. The average was 40.0, a difference of 15.6 ASF per ADA between MCCD and the district comparison group. MCCD's ratio was 38 percent larger than the average ratio for the district comparison group. See computer printout, Appendix O, and Table 9.

Table 9

Assignable Square Feet Per ADA

District	ASF Per ADA
Marin District	55.6
San Luis Obispo District	50.2
Kern District	63.4
Peralta District	49.6
College Comparison Group Average	54.4
Chaffey District	48.2
Cabrillo District	37.8
Allan Hancock District	33.9
District Comparison Group Average	40.0

Summary. Comparisons between MCCD and two comparison groups were made for two factors that might have influenced their differences in costs for Instruction and Instructional Services. The two factors were (1) ADA per FTEF, and (2) percentage change in district ADA over a five-year period. The Gooder study demonstrated that ADA per FTEF was negatively correlated to costs of Instruction and Instructional Services; the lower the ratio, the higher the costs. In 1982-83, MCCD's ADA per FTEF ratio was 14 percent smaller than the average of the ratios for the college comparison group; its ratio for cost of Instruction and

Instructional Services was 3.84 percentage points higher than the average for the college comparison group. In 1982-83, MCCD's ADA per FTEF ratio was 21 percent smaller than the average of the ratios for the district comparison group and its ratio for cost of Instruction and Instructional Services was 2.44 percentage points lower than the average for the district comparison group.

The Gooder study demonstrated that the percentage change in district ADA also was negatively correlated to costs of Instruction and Instructional Services. When ADA declined, Instruction and Instructional Services costs per ADA increased, and when ADA increased, costs per ADA decreased. From 1977-78 to 1982-83, MCCD's ADA declined .71 percent compared to a mid-point increase of 10.84 percent for the college comparison group; its ratio for the cost of Instruction and Instructional Services was 3.84 percentage points higher than the average for the college comparison group. From 1977-78 to 1982-83, MCCD's ADA declined .71 percent compared to a mid-point decrease of 9.30 percent for the district comparison group; its ratio for the cost of Instruction and Instructional Services was 2.44 percentage points lower than the average for the district comparison group.

Comparisons between MCCD and two comparison groups were made for one factor that might have influenced their differences in costs for Maintenance and Operations. The factor was Assignable Square Feet Per ADA. The Gooder study demonstrated that the ratio of ASF per ADA was positively correlated to costs of Maintenance and Operations--the higher the ratio, the higher the costs.

In 1982-83, MCCD's ASF to ADA ratio was 2 percent larger than the average of the ratios for the college comparison group; its ratio for cost of Maintenance and Operations was 1.83 percentage points smaller. In 1982-83, MCCD's ASF per ADA ratio was 28 percent larger than the average of the ratios for the district comparison group; its ratio for cost of Maintenance and Operations was 3.32 percentage points larger.

Identifying Trends

Using 1982-83 data from the Gooder report and MCCD data for 1983-84 and 1984-85, three-year ratios for MCCD's costs of four major categories of activities to total operating costs were presented and reviewed for trends.

Instruction and instructional services. As noted earlier, MCCD's percentage of the total operating budget spent on costs for Instruction and Instructional Services was 66.2 for 1982-83. For 1983-84, that percentage was 65.8. For 1984-85, that percentage was 67.4. However, since it was reported as of December 1984, the 1984-85 percentage did not include a ten-percent salary increase awarded to faculty that was retroactive to November 15, 1984. See Table 1).

Table 10

Three-Year Ratios for Costs

Major Category	1982-83	1983-84	1984-85
Instruction and Instructional Services	.662:1	.658:1	.674:1
Student Services	.080:1	.071:1	.055:1
Maintenance and Operations	.123:1	.116:1	.123:1
General Services	.135:1	.155:1	.148:1

Over the three-year period, the range of percentages was from 65.8 to 67.4, with no clear trend emerging. For all three years, MCCD's percentages were higher than the average percentage the college comparison group spent, and lower than the average percentage the district comparison group spent for costs of Instruction and Instructional Services in 1982-83. See Tables 10 and 3.

Student services. As noted earlier, MCCD spent 8.0 percent of its total operating budget for costs of Student Services in 1982-83. For 1983-84, that percentage was 7.1. The percentage budgeted for 1984-85 was 5.5. Over the three-year period, the range of percentages was from 5.5 to 8.0, with a clear trend emerging: decreasing percentages of total operating costs for costs of Student Services. For all three years, MCCD spent smaller percentages of its total operating costs for costs of Student Services than the average percentages of both the college comparison group and the district comparison group in 1982-83. See Tables 10 and 4.

Maintenance and operations. As noted earlier, MCCD spent 12.3 percent of its total operating budget for cost of Maintenance and Operations in 1982-83. For 1983-84, that percentage was 11.6. Budgeted for 1984-85 was a percentage of 12.3. During the three-year period, the range of percentages was from 11.6 to 12.3, with no clear trend emerging. All three years, MCCD spent a lower percentage for costs of Maintenance and Operations than the average percentage of the college comparison group, and a higher percentage than the average percentage of the district comparison group in 1982-83. See Tables 10 and 5.

General services. MCCD spent 13.5 percent of its total operating budget on costs of General Services in 1982-83. For 1983-84, that percentage was 15.5. Budgeted for 1984-85 was a percentage of 14.8. During the three-year period, the range of percentages was from 13.5 to 15.5, with no clear trend emerging. MCCD spent a higher percentage of its total operating costs on General Services two of the three years than the average percentage of the college comparison group, and a higher percentage all three years than the average percentage of the district comparison group in 1982-83. See Tables 10 and 6.

Summary. When making three-year comparisons of ratios for costs of major categories of activities for MCCD, one clear trend emerged. It was that MCCD exhibited increasingly smaller ratios of its total operating costs for costs of Student Services than similar districts exhibited in 1982-83.

Summary

To test the cost-effective model that California community college districts can use to compare their costs with those of similar districts, MCCD was used as the test district. The test was conducted in five stages. They were (1) building the database, (2) selecting the comparison groups, (3) comparing costs, (4) identifying factors influencing differences in costs, and (5) identifying trends.

The test of the model resulted in the following information about the test district, MCCD.

1. Compared with similar districts in 1982-83, MCCD exhibited wider differences in its ratios for costs of Instruction and Instructional Services, and Maintenance and Operations, than it exhibited in its ratios for costs of Student Services, and General Services.

2. Compared with similar districts in 1982-83, MCCD exhibited a 14 to 21 percent smaller ratio of ADA to FTEF, which may have influenced MCCD's cost of Instruction and Instructional Services.

3. MCCD experienced a .71 percent change in ADA from 1977-78 to 1982-83, while similar districts experienced a 9 to 10 percent change, which may have decreased or increased similar districts' costs compared with MCCD's costs of Instruction and Instructional Services in 1982-83.

4. Compared with similar districts in 1982-83, MCCD exhibited a 2 to 28 percent larger ratio of ASF to ADA, which may have influenced MCCD's cost of Maintenance and Operations.

5. For a three-year period, 1982-83 to 1984-85, MCCD exhibited increasingly smaller ratios of its total operating costs for costs of Student Services than similar districts exhibited in 1982-83.

6. Information gained in this study could be used by MCCD to develop normative cost and budget guidelines.

Guidelines could be developed that used the rational information gained in this study, in combination with whatever market or political interaction information MCCD chose to identify by some other method. The two sets of rational information gained in this study were:

1. ratios to total operating costs for costs of the four major categories of activities engaged in by California community college districts that two groups of districts similar to MCCD exhibited in 1982-83, and

2. ratios to total operating costs for costs of the same four major categories of activities that MCCD exhibited in 1982-83, 1983-84, and 1984-85.

Process for Applying the Model

A California community college district can compare its ratios to total operating costs for costs of four major categories of activities to those of similar districts by using the cost-effective model developed in this study. The model can be applied by following the five-step process that was used to test the model. The steps were (1) building the database, (2) selecting the comparison groups, (3) comparing costs, (4) identifying factors influencing differences in costs, and (5) identifying trends. The information gained by applying the model can then be interpreted, conclusions can be drawn, and recommendations can be made.

Summary

The results of this study were presented in five sections that corresponded with the five research questions presented in Chapter 1. They were (1) community college costs and comparative-cost models, (2) design of a cost-effective model, (3) adaptations of microcomputer software, (4) test of the model, and (5) process for applying the model.

The answer to the question, what information regarding community college costs and comparative-cost models was available in the literature, was that community colleges could choose two basic approaches in comparing costs at an institutional level. One of the two approaches, the ratios-for-cost approach, was determined to be appropriate for California community college districts to use in comparing costs. Information about community college costs in other states was determined to be inappropriate for use in this study. Information about average percentages that all California community college districts spent for major categories also was determined to be inappropriate for use in this study. Information about California community college districts' costs that was reported in the Gooder study was determined to be appropriate for use in this study.

The answer to the question, what cost-effective model could be designed that would allow California community college districts to compare their costs with those of similar districts, was that a cost-effective model could be designed that consisted of two major components. These components were (1) the four major categories of activities identified in the Gooder study, and (2) the factors influencing differences in total operating costs, and the factors influencing costs within one or more of the four major categories of activities that were identified in the Gooder study.

The answer to the question, what adaptations of microcomputer software were needed to develop the model, was two fold. One, appropriate database management software needed to be selected. Two, a structure for the California community college district database needed to be designed.

The structure needed to consist of sixteen fields (columns) by which the seventy records (rows) could be sorted in ascending order of the numeric data.

The answer to the question, what data about California community college districts and MCCD were needed to test the model, was that two sets of data were needed to build the database. These sets of data were (1) district cost and characteristic data for California community college districts for at least one year, and (2) cost and budget data for the test district for two or more years. To test the model, four additional steps were required. These steps were (1) selecting the comparison groups, (2) comparing costs, (3) identifying factors influencing differences in costs, and (4) identifying trends. The test of the model resulted in comparative-cost information about MCCD. The information could be used by MCCD to develop normative cost and budget guidelines.

The answer to the fifth question, what process could be used to apply the model, was that the five-step process used to test the model could be used by California community college districts to apply the model.

Chapter 5

INTERPRETATION, CONCLUSIONS, AND RECOMMENDATIONS

In the final chapter of this Major Applied Research Project, the results of the study were interpreted, conclusions were drawn, and recommendations were made. Also, strategies for diffusion, implementation, and improvement of current educational practice were given.

Interpretation and Conclusions

Data for MCCD were used in the test of the model. The results of the test indicated that, compared with similar districts in 1982-83, MCCD exhibited wider differences in its ratios to total operating costs for costs of Instruction and Instructional Services, and Maintenance and Operations, than it exhibited in its ratios to total operating costs for costs of Student Services, and General Services.

Compared with similar districts in 1982-83, MCCD exhibited a 14 to 21 percent smaller ratio of ADA to FTEF, which may have influenced MCCD's cost of Instruction and Instructional Services. MCCD's experienced a .71 percent change in ADA from 1977-78 to 1982-83, while similar districts experienced a 9 to 10 percent change, which may have decreased or increased similar districts' costs compared with MCCD's costs of Instruction and Instructional Services in 1982-83.

It was concluded that, in 1982-83, MCCD's ratio for cost of Instruction and Instructional Services was different from similar districts. It also was concluded that MCCD exhibited a smaller ratio of ADA to FTEF than similar districts in 1982-83, and experienced a smaller percentage change in ADA from 1977-78 to 1982-83 than similar districts.

Compared with similar districts in 1982-83, MCCD exhibited a 2 to 28 percent larger ratio of ASF to ADA. It was concluded that, in 1982-83, MCCD's ratio for cost of Maintenance and Operations was different from similar districts. It also was concluded that MCCD exhibited a higher ratio of ASF to ADA than similar districts in 1982-83.

The results of the test of the model also indicated that, over a three-year period, MCCD exhibited increasingly smaller ratios of its total operating costs for costs of Student Services than similar districts exhibited in 1982-83. No further conclusions were drawn regarding this finding. However, if desired, the model would allow MCCD to gain additional information about factors known to influence differences in costs of Student Services. These factors included (1) student financial aid recipients as a percentage of total enrollment for the full term which, in the Gooder study, demonstrated a positive correlation to costs of Student Services, (2) full-time enrollment as a percentage of total enrollment for the fall term, which demonstrated a positive correlation to costs of Student Services, and (3) annual non-credit ADA as a percentage of total ADA, which demonstrated a negative correlation to costs of Student Services. If MCCD's annual non-credit ADA as a percentage of total ADA were larger, student financial aid recipients as a percentage of total enrollment for the fall term were smaller, or full-time enrollment as a percentage of total enrollment were smaller than similar districts, these factors might have influenced MCCD's smaller percentages of costs for Student Services than similar districts.

The results of the test indicated that information gained in the study could be used by MCCD to develop normative cost and budget guidelines. Guidelines could be developed that used the rational information gained in this study, in combination with whatever market or political interaction information MCCD chose to identify by some other method. Once developed, MCCD could use these guidelines to assist it in making selective and rational budget decisions, including cuts in costs.

Based on these conclusions, it is recommended to Otto Roemmich, consultant to the MCCD Board of Trustees during 1984-85, that he consider using the information gained in this study to develop normative cost and budget guidelines for MCCD. It also is recommended that, once developed, Roemmich consider using these guidelines in budget-related bargaining with interest groups and in making budget recommendations to the Board of Trustees for 1985-86. It is recommended to the incoming MCCD president, Myrna R. Miller, that she consider applying the model on an annual basis, using the most recent data about MCCD's costs and characteristics that are available.

Conclusions drawn for California community college districts were that the model developed in this Major Applied Research Project can be used by California community college districts to compare their costs with similar districts and that the model will be cost effective to use. Any California community college district can apply it by following a five-step process. The steps in that process are (1) use the 1982-83 database built in this study and printed out as Appendices C through P, (2) select a comparison group or groups, (3) compare costs, (4) identify factors influencing differences in costs, and (5) use two or more years of district cost and budget data to identify trends. It also was concluded that, in any given year, the model can be applied by using the most recent cost and characteristic data for the community college district applying the model. A district's cost and characteristic data will differ from year to year; these differences may result in the selection of different districts into the comparison groups from year to year.

Based on these conclusions, it is recommended that the chief executive officers of the seventy California community college districts consider using the model developed in this study to compare their costs with those of similar districts.

The conclusion drawn for community college districts in other states was that, if consistently-grouped statewide data were available, community college districts in other states can use database management software and microcomputers to adapt the cost-effective model developed in this study. Based on this conclusion, it is recommended that community college districts in other states consider adapting the cost-effective model developed in this study, using their own states' costs and characteristic data, so they can use the adapted model to compare their costs with those of similar districts.

Recommendations for the Improvement of Practice

Current educational practice for colleges such as MCCD that are experiencing financial shortfalls is to take an across-the-board approach in cutting costs. There are several reasons why this approach is used. It is easier to apply, appears to be more humanitarian and democratic, and causes relatively less acrimony than selective cuts. Establishing selective program priorities is difficult and often distressing. Once the decision to make selective cuts is made, there are two basic strategies a college can use to make budget decisions. They are (1) rational calculation, and (2) marketing or political interaction. If a college does not include rational calculation of costs as a component in the development of the guidelines, inappropriate and irrational cuts may be made.

California community college districts that are experiencing fiscal problems can use the cost-effective model developed in this Major Applied Research Project to compare their costs with similar districts. The model has the potential to improve educational practice. It can be used by the seventy California community college districts to compare their costs with similar districts. It also can be adapted by community college districts in other states. These comparisons of costs can assist community college districts develop normative cost and budget guidelines. These guidelines can assist them in making selective and rational budget decisions, including cuts in costs.

Strategies for Diffusion, Implementation, and Improvement

A report of the results of this study was prepared in the same format as that required for the Major Applied Research Project. A draft of the report was presented to the consultant to the Board of Trustees at MCCD in July of 1985. A copy of the report also will be made available to the incoming president of MCCD upon her arrival in August.

One-year ratios to total operating costs for costs of four major categories of activities for two groups of districts similar to MCCD for 1982-83 were identified in this study. Three-year trends for MCCD also were identified for 1982-83, 1983-84, and 1984-85. These sets of ratios, together with budgeted ratios for the four major activities as they were approved by the Board of Trustees in the tentative budget for 1985-86, were reviewed with the consultant in July. After that review, the consultant evaluated the usefulness of the model and presented his conclusions in a letter. See Appendix Q.

A summary of the MARP and the letter from the consultant will be distributed to the chief executive officers of the other sixty-nine community college districts in the State of California and to the incoming Chancellor of the California Community Colleges. The approved MARP will be submitted to the ERIC Clearinghouse for Junior Colleges for possible inclusion in the ERIC system.

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APPENDICES

APPENDIX A

```
Structure for database : C:compcost.dbf
Number of data records :       70
Date of last update    : 08/04/85
Field  Field name  Type       Width    Dec
    1  DISTNAME    Character     16
    2  DISTADA     Numeric        5
    3  AVECOLADA   Numeric        5
    4  REVENUE     Numeric        9
    5  REVPERADA   Numeric        4
    6  RATIOFORMO  Numeric        6      2
    7  ADAPERFTEF  Numeric        5      2
    8  RATIOFORIN  Numeric        5      2
    9  RATIOFORSS  Numeric        5      2
   10  RATIOFORGS  Numeric        5      2
   11  ASFPERADA   Numeric        6      1
   12  ADACHG7778  Numeric        6      2
   13  PCTFINAID   Numeric        5      2
   14  PCTFULLTIM  Numeric        4      1
   15  PCTNONCRED  Numeric        4      1
   16  PCTASFLAB   Numeric        4      1
** Total **                      95
```

APPENDIX B

DISTRICT	REVENUE
Palo Verde	939000
Lake Tahoe	1737000
West Kern	2708000
Barstow	3015000
Siskiyous	3304000
Mendocino	3711000
Mt San Jacinto	3880000
Lassen	4317000
West Hills	4380000
Santa Clarita	4515000
Gavilan	4833000
Victor Valley	5452000
Imperial	6050000
Antelope Valley	6281000
Compton	7083000
San Luis Obispo	7295000
Napa Valley	8641000
Coachella Valley	8784000
Fremont Newark	9206000
Monterey Pen	9312000
Solano	9425000
Hartnell	9559000
Sequoias	9710000
Citrus	10233000
Merced	10390000
Mira Costa	10440000
Redwoods	10639000
Shasta	10707000
Butte	10874000
Sierra	11222000
Allan Hancock	12029000
Cabrillo	12288000
Yuba	12356000
Glendale	12669000
Southwestern	13322000
Rio Hondo	13667000
Santa Barbara	15041000
Riverside	15072000
Marin	15108000
Chaffey	15422000
Santa Monica	19086000
Palomar	19353000
SanJoaquin Delta	19500000
South County	20291000
Grossmont	20300000
Yosemite	20585000
San Bernardino	21170000
Sonoma	22043000
San Jose	22377000
Kern	22795000
Cerritos	23111000
State Center	23334000

DISTRICT	REVENUE
West Valley	24209000
Pasadena	27156000
Mt San Antonio	27321000
Long Beach	27742000
El Camino	28200000
Rancho Santiago	28607000
Saddleback	29386000
Ventura	32114000
San Mateo	33982000
Contra Costa	37963000
Peralta	38399000
Foothill-DeAnza	41151000
North Orange	48044000
Los Rios	50050000
San Francisco	53477000
San Diego	59654000
Coast	61563000
Los Angeles	160173000

APPENDIX C

DISTRICT	DISTRICT AVERAGE DAILY ATTENDANCE
Palo Verde	355
Lake Tahoe	538
West Kern	652
Barstow	1017
West Hills	1313
Mendocino	1371
Siskiyous	1715
Mt San Jacinto	1892
Santa Clarita	1951
Lassen	2187
Gavilan	2299
Victor Valley	2438
Imperial	3018
Compton	3129
Antelope Valley	3698
San Luis Obispo	3803
Coachella Valley	3830
Mira Costa	4490
Hartnell	4572
Fremont Newark	4764
Napa Valley	4769
Redwoods	5065
Sequoias	5113
Monterey Pen	5300
Shasta	5478
Solano	5489
Sierra	5836
Yuba	5843
Merced	5919
Citrus	6024
Butte	6150
Cabrillo	6823
Allan Hancock	6929
Marin	7389
Chaffey	7709
Southwestern	7918
Rio Hondo	8147
Riverside	8759
Glendale	8778
Santa Barbara	8913
Yosemite	9697
Kern	10334
SanJoaquin Delta	10705
Grossmont	10773
Palomar	11051
San Bernardino	11298
South County	11503
Santa Monica	11546
San Jose	11851
State Center	12172
Sonoma	13305
West Valley	13529

DISTRICT	DISTRICT AVERAGE DAILY ATTENDANCE
Saddleback	13537
Cerritos	14292
Mt San Antonio	14401
Pasadena	14752
El Camino	15093
Long Beach	15744
Rancho Santiago	16225
San Mateo	16932
Ventura	17597
Contra Costa	19475
Peralta	20296
Foothill-DeAnza	23192
North Orange	27663
Los Rios	28250
Coast	32273
San Francisco	34615
San Diego	35192
Los Angeles	72391

APPENDIX D

DISTRICT	REVENUE PER AVERAGE DAILY ATTENDANCE
Glendale	1443
San Francisco	1545
Cerritos	1617
Santa Monica	1653
Sonoma	1657
Rio Hondo	1678
Southwestern	1682
Santa Barbara	1688
San Diego	1695
Antelope Valley	1698
Citrus	1699
Solano	1717
Riverside	1721
Allan Hancock	1736
North Orange	1737
Palomar	1751
Merced	1755
Monterey Pen	1757
Long Beach	1762
Rancho Santiago	1763
South County	1764
Butte	1768
Los Rios	1772
Foothill-DeAnza	1774
West Valley	1789
Cabrillo	1801
Napa Valley	1812
SanJoaquin Delta	1822
Ventura	1825
Pasadena	1841
El Camino	1868
San Bernardino	1874
Grossmont	1884
San Jose	1888
Peralta	1892
Mt San Antonio	1897
Sequoias	1899
Coast	1908
State Center	1917
San Luis Obispo	1918
Sierra	1923
Siskiyous	1927
Fremont Newark	1932
Contra Costa	1949
Shasta	1955
Lassen	1974
Chaffey	2001
Imperial	2005
San Mateo	2007
Marin	2045
Mt San Jacinto	2051
Hartnell	2091

DISTRICT	REVENUE PER AVERAGE DAILY ATTENDANCE
Redwoods	2100
Gavilan	2102
Yuba	2115
Yosemite	2123
Saddleback	2171
Kern	2206
Los Angeles	2213
Victor Valley	2236
Compton	2264
Coachella Valley	2293
Santa Clarita	2314
Mira Costa	2325
Palo Verde	2645
Mendocino	2707
Barstow	2965
Lake Tahoe	3229
West Hills	3336
West Kern	4153

APPENDIX E

DISTRICT	AVERAGE ADA OF COLLEGES WITHIN THE DISTRICT
Palo Verde	355
Lake Tahoe	538
West Kern	652
Barstow	1017
West Hills	1313
Mendocino	1371
Siskiyous	1715
Mt San Jacinto	1892
Santa Clarita	1951
Lassen	2187
Gavilan	2299
Victor Valley	2438
Imperial	3018
Compton	3129
Kern	3445
Marin	3695
Antelope Valley	3698
San Luis Obispo	3803
Coachella Valley	3830
Peralta	4059
Mira Costa	4490
Hartnell	4572
Fremont Newark	4764
Napa Valley	4769
Yosemite	4849
Redwoods	5065
Sequoias	5113
Monterey Pen	5300
Grossmont	5387
Shasta	5478
Solano	5489
San Mateo	5644
San Bernardino	5649
Sierra	5836
Yuba	5843
Ventura	5866
Merced	5919
San Jose	5926
Citrus	6024
State Center	6086
Butte	6150
Contra Costa	6492
West Valley	6765
Saddleback	6769
Cabrillo	6823
Allan Hancock	6929
Chaffey	7709
Southwestern	7918
Los Angeles	8043
Rio Hondo	8147
Riverside	8759

DISTRICT	AVERAGE ADA OF COLLEGES WITHIN THE DISTRICT
Glendale	8778
Santa Barbara	8913
Los Rios	9417
SanJoaquin Delta	10705
Coast	10758
Palomar	11051
South County	11503
Santa Monica	11546
Foothill-DeAnza	11596
San Diego	11731
Sonoma	13305
North Orange	13832
Cerritos	14292
Mt San Antonio	14401
Pasadena	14752
El Camino	15093
Long Beach	15744
Rancho Santiago	16225
San Francisco	34615

APPENDIX F

DISTRICT	RATIOS FOR COST OF INSTRUCTION AND INSTRUCTIONAL SERVICES
Santa Clarita	51.99
Lake Tahoe	53.21
West Kern	55.08
Palo Verde	57.20
Mt San Jacinto	57.41
Compton	57.59
Mendocino	59.58
Lassen	59.92
West Hills	59.96
San Bernardino	60.10
San Luis Obispo	60.53
San Diego	60.53
Coachella Valley	60.94
Peralta	61.00
Barstow	61.00
Los Angeles	61.20
Victor Valley	63.50
State Center	64.14
Merced	64.16
Los Rios	64.19
Mira Costa	64.21
Santa Monica	64.32
Sierra	64.39
Grossmont	64.44
Citrus	64.53
Fremont Newark	64.54
Butte	64.72
Imperial	64.75
Solano	65.10
Southwestern	65.16
North Orange	65.22
Kern	65.53
Pasadena	65.59
Mt San Antonio	65.75
Saddleback	66.12
Marin	66.19
San Francisco	66.32
SanJoaquin Delta	66.33
San Jose	66.44
Sequoias	66.71
Long Beach	66.75
Antelope Valley	67.05
Riverside	67.19
Ventura	67.26
Yuba	67.27
Yosemite	67.30
West Valley	67.51
Allan Hancock	67.56
Shasta	67.58
El Camino	67.66
Glendale	68.16

DISTRICT	RATIOS FOR INSTRUCTION AND INSTRUCTIONAL SERVICES
Monterey Pen	68.17
Santa Barbara	68.19
Gavilan	68.44
Rio Hondo	68.62
Cerritos	68.87
Hartnell	68.92
Chaffey	69.06
Cabrillo	69.27
Contra Costa	69.28
Redwoods	69.55
Napa Valley	69.70
South County	69.93
Rancho Santiago	70.40
Siskiyous	70.41
Foothill-DeAnza	71.57
San Mateo	73.31
Coast	73.38
Palomar	73.47
Sonoma	74.37

APPENDIX G

DISTRICT	RATIOS FOR COST OF STUDENT SERVICES
Saddleback	5.30
Redwoods	5.61
Napa Valley	6.26
Coast	6.46
Siskiyous	6.55
San Francisco	6.76
Rio Hondo	6.83
Santa Barbara	6.99
Gavilan	7.15
Sonoma	7.19
Sierra	7.20
Hartnell	7.21
SanJoaquin Delta	7.31
West Valley	7.44
Contra Costa	7.44
Pasadena	7.50
North Orange	7.67
San Bernardino	7.76
San Luis Obispo	7.79
Foothill-DeAnza	7.85
Marin	7.96
Rancho Santiago	8.12
Cerritos	8.13
Mt San Antonio	8.18
Cabrillo	8.20
Shasta	8.32
Santa Monica	8.37
Lake Tahoe	8.37
San Jose	8.40
Riverside	8.44
Southwestern	8.48
State Center	8.57
Santa Clarita	8.64
San Mateo	8.75
Fremont Newark	8.82
Solano	8.83
San Diego	8.90
Palomar	8.91
Yosemite	9.21
El Camiño	9.31
Kern	9.31
Citrus	9.36
Coachella Valley	9.46
Grossmont	9.61
Compton	9.67
Los Rios	9.70
Chaffey	9.73
Yuba	9.73
Long Beach	9.90
Ventura	9.95
Lassen	10.00
Antelope Valley	10.13

DISTRICT	RATIOS FOR COST OF STUDENT SERVICES
Allan Hancock	10.23
South County	10.27
Palo Verde	10.29
West Kern	10.30
Mira Costa	10.54
Peralta	10.59
Butte	10.66
Mendocino	10.70
Sequoias	10.74
Barstow	10.76
Monterey Pen	10.78
West Hills	10.88
Los Angeles	11.35
Merced	12.25
Victor Valley	12.74
Glendale	13.80
Imperial	14.35
Mt San Jacinto	14.64

APPENDIX H

DISTRICT	RATIOS FOR COST OF MAINTENANCE AND OPERATIONS
Chaffey	5.07
Sierra	6.46
Mendocino	7.89
Lake Tahoe	8.01
Redwoods	8.04
Palo Verde	8.18
Glendale	8.73
Sonoma	9.02
Coast	9.03
Yosemite	9.13
Rancho Santiago	9.38
San Mateo	9.69
San Diego	9.77
Cabrillo	10.24
San Jose	10.31
Yuba	10.45
Peralta	10.50
Foothill-DeAnza	10.87
South County	10.97
Palomar	11.08
Allan Hancock	11.28
Saddleback	11.40
Solano	11.40
Santa Barbara	11.45
Napa Valley	11.52
Rio Hondo	11.53
State Center	11.57
West Valley	11.81
Sequoias	11.82
Fremont Newark	11.93
Ventura	11.99
Imperial	12.01
Barstow	12.22
Long Beach	12.25
Marin	12.32
Cerritos	12.34
Merced	12.42
Grossmont	12.54
Los Angeles	12.67
Monterey Pen	12.84
Gavilan	12.95
San Bernardino	12.95
Hartnell	13.08
Mira Costa	13.15
Compton	13.17
El Camino	13.19
San Francisco	13.20
Los Rios	13.24
Kern	13.27
Contra Costa	13.27
Butte	13.53

DISTRICT	RATIOS FOR COST OF MAINTENANCE AND OPERATIONS
North Orange	13.59
Siskiyous	13.69
Santa Monica	13.95
Mt San Jacinto	14.00
Riverside	14.07
Citrus	14.32
Southwestern	14.35
Pasadena	14.46
Antelope Valley	14.72
Victor Valley	15.40
Mt San Antonio	15.54
Shasta	15.54
SanJoaquin Delta	15.58
Lassen	16.28
Coachella Valley	17.10
West Hills	17.69
San Luis Obispo	18.68
West Kern	20.35
Santa Clarita	25.54

APPENDIX I

DISTRICT	RATIOS FOR COST OF GENERAL SERVICES
Palomar	6.54
Antelope Valley	8.10
San Mateo	8.21
Monterey Pen	8.21
Victor Valley	8.31
Shasta	8.52
South County	8.88
Imperial	8.92
Glendale	9.25
Siskiyous	9.34
Sonoma	9.47
Foothill-DeAnza	9.71
El Camino	9.79
Contra Costa	10.01
Riverside	10.30
Mt San Antonio	10.48
Cerritos	10.66
Hartnell	10.74
Sequoias	10.74
Ventura	10.75
SanJoaquin Delta	10.77
Allan Hancock	10.93
Coast	11.03
Butte	11.10
Long Beach	11.15
Merced	11.28
Gavilan	11.42
West Hills	11.50
San Bernardino	11.71
Citrus	11.79
Kern	11.88
Southwestern	11.96
Mira Costa	12.10
Rancho Santiago	12.10
Cabrillo	12.28
Pasadena	12.45
Yuba	12.51
Coachella Valley	12.54
Napa Valley	12.58
Los Rios	12.88
San Luis Obispo	12.95
Rio Hondo	13.02
West Valley	13.24
Santa Barbara	13.31
Santa Monica	13.36
Grossmont	13.40
Marin	13.53
North Orange	13.53
San Francisco	13.78
Lassen	13.85
Santa Clarita	13.87
Mt San Jacinto	13.95

DISTRICT	RATIOS FOR COST OF GENERAL SERVICES
West Kern	14.26
Yosemite	14.40
Los Angeles	14.70
Fremont Newark	14.71
Solano	14.72
San Jose	14.85
State Center	15.67
Barstow	16.01
Chaffey	16.19
Redwoods	16.74
Saddleback	17.17
Peralta	17.91
Compton	19.54
San Diego	20.85
Mendocino	21.83
Sierra	22.01
Palo Verde	24.34
Lake Tahoe	30.41

APPENDIX J

DISTRICT	AVERAGE DAILY ATTENDANCE PER FULL TIME EQUIVALENT FACULTY
West Kern	14.55
Lake Tahoe	17.15
Palo Verde	17.19
Coachella Valley	17.33
West Hills	20.06
Mendocino	20.61
Gavilan	22.20
Kern	22.51
San Diego	22.63
Chaffey	23.33
Victor Valley	23.67
Napa Valley	23.88
Marin	24.16
San Francisco	24.47
Imperial	24.63
Siskiyous	24.74
Sequoias	24.81
Santa Clarita	25.58
Antelope Valley	25.59
Lassen	25.63
Fremont Newark	25.82
Redwoods	26.19
Barstow	26.42
Hartnell	26.86
Citrus	27.05
Cabrillo	27.12
Yosemite	27.33
Yuba	27.51
Solano	27.58
Sierra	27.84
Ventura	28.12
Butte	28.21
San Bernardino	28.23
Shasta	28.37
Santa Barbara	28.56
SanJoaquin Delta	28.57
San Jose	28.84
Glendale	28.94
Palomar	29.04
Saddleback	29.31
Rio Hondo	29.38
Pasadena	29.57
Los Rios	29.60
Los Angeles	29.62
San Mateo	29.85
San Luis Obispo	29.87
Mira Costa	29.92
Compton	29.95
Southwestern	30.06
Monterey Pen	30.39
Grossmont	30.46

DISTRICT	AVERAGE DAILY ATTENDANCE PER FULL TIME EQUIVALENT FACULTY
Coast	30.62
Long Beach	30.76
Rancho Santiago	30.80
Sonoma	30.86
State Center	30.88
Contra Costa	31.21
Mt San Jacinto	31.24
Foothill-DeAnza	31.35
Allan Hancock	31.95
El Camino	32.09
South County	32.36
West Valley	32.53
North Orange	32.58
Mt San Antonio	32.70
Peralta	35.08
Riverside	35.62
Santa Monica	35.72
Cerritos	36.85
Merced	39.22

APPENDIX K

DISTRICT	PERCENTAGE CHANGE IN DISTRICT ADA OVER A FIVE-YEAR PERIOD
Southwestern	-37.60
Compton	-31.26
Chaffey	-17.80
Coachella Valley	-15.64
Barstow	-15.32
Monterey Pen	-9.45
Yosemite	-9.38
Solano	-9.09
West Hills	-8.18
Pasadena	-8.15
Palo Verde	-8.03
San Mateo	-7.85
Lake Tahoe	-7.56
Kern	-6.82
San Bernardino	-6.33
Long Beach	-6.25
Foothill-DeAnza	-6.23
SanJoaquin Delta	-5.00
Shasta	-4.16
Los Angeles	-3.44
Lassen	-2.97
Peralta	-2.84
Allan Hancock	-2.27
Rio Hondo	-2.21
Santa Monica	-2.12
Redwoods	-1.97
Contra Costa	-1.65
Riverside	-0.75
Marin	-0.71
Imperial	-0.17
El Camino	-0.07
Napa Valley	0.06
Merced	0.77
Cabrillo	0.80
Hartnell	0.95
Antelope Valley	1.23
West Kern	1.24
Citrus	1.50
Victor Valley	1.63
Santa Barbara	1.77
North Orange	1.92
Los Rios	2.38
Ventura	2.57
Coast	2.70
Sequoias	3.42
Cerritos	4.05
San Diego	4.12
Yuba	4.47
Sierra	4.68
Grossmont	5.96
Gavilan	8.34

DISTRICT	PERCENTAGE CHANGE IN DISTRICT ADA OVER A FIVE-YEAR PERIOD
Siskiyous	8.89
San Jose	9.50
Fremont Newark	10.28
Palomar	11.83
Mira Costa	12.31
West Valley	14.79
San Luis Obispo	14.86
South County	15.57
San Francisco	16.39
Mt San Antonio	16.40
Sonoma	16.75
Mendocino	17.28
Butte	17.34
Santa Clarita	18.10
Rancho Santiago	31.22
Glendale	32.20
Mt San Jacinto	34.09
State Center	45.11
Saddleback	65.67

APPENDIX L

DISTRICT	STUDENT FINANCIAL AID RECIPIENTS AS A PERCENTAGE OF TOTAL ENROLLMENT FOR THE FALL TERM
Cerritos	2.89
North Orange	2.95
Santa Clarita	3.47
Mt San Antonio	4.23
Lake Tahoe	4.36
West Valley	4.60
Fremont Newark	4.74
Citrus	4.96
Coast	5.09
Santa Monica	5.22
Allan Hancock	5.80
Ventura	6.01
Antelope Valley	6.10
Saddleback	6.19
Palomar	6.20
Rancho Santiago	6.25
El Camino	6.50
Solano	6.56
Chaffey	6.63
Mendocino	6.90
Mira Costa	7.00
Sierra	7.07
San Mateo	7.23
Glendale	7.24
San Francisco	7.42
Contra Costa	7.61
South County	7.62
Los Angeles	7.71
Yosemite	7.80
Monterey Pen	8.07
Coachella Valley	8.71
Foothill-DeAnza	8.85
Grossmont	8.88
Victor Valley	9.02
Santa Barbara	9.38
Riverside	9.40
San Diego	9.40
Kern	9.61
SanJoaquin Delta	10.48
San Jose	11.69
Rio Hondo	11.81
Napa Valley	11.97
Long Beach	12.15
San Bernardino	12.21
Hartnell	12.32
Barstow	12.32
Pasadena	12.71
Los Rios	13.08

DISTRICT	STUDENT FINANCIAL AID RECIPIENTS AS A PERCENTAGE OF TOTAL ENROLLMENT FOR THE FALL TERM
Cabrillo	13.09
Siskiyous	13.17
Sequoias	14.06
Marin	14.14
Yuba	15.02
Southwestern	15.03
Mt San Jacinto	15.17
Peralta	15.30
Redwoods	15.49
Sonoma	16.69
Gavilan	16.81
Butte	17.59
Lassen	19.04
West Hills	19.70
State Center	20.90
Palo Verde	21.10
Shasta	24.49
Merced	25.10
San Luis Obispo	25.45
Imperial	27.70
West Kern	38.48
Compton	38.54

APPENDIX M

DISTRICT	FULL-TIME ENROLLMENT AS A PERCENTAGE OF TOTAL ENROLLMENT FOR FALL TERM
Mendocino	11.6
North Orange	13.4
Rancho Santiago	14.7
Lake Tahoe	15.9
Coachella Valley	17.3
Mira Costa	18.4
Merced	18.4
Peralta	19.3
Coast	19.5
South County	19.8
Saddleback	20.0
Antelope Valley	20.3
Glendale	20.4
Long Beach	20.5
Victor Valley	20.9
San Diego	20.9
Allan Hancock	20.9
Santa Monica	21.0
Solano	21.1
El Camino	21.3
Mt San Jacinto	21.3
West Valley	21.5
Mt San Antonio	22.0
Cerritos	22.5
Palo Verde	22.7
Kern	23.0
Riverside	23.4
San Jose	23.6
Sonoma	23.6
Siskiyous	23.7
Monterey Pen	23.9
Palomar	24.5
San Bernardino	24.6
Rio Hondo	24.9
Barstow	25.0
Foothill-DeAnza	25.1
Los Angeles	25.1
Hartnell	25.5
Ventura	25.9
Marin	25.9
San Mateo	26.2
Citrus	26.3
Napa Valley	26.7
Fremont Newark	26.7
Contra Costa	26.8
West Hills	27.3
Grossmont	27.3
Pasadena	27.4
Redwoods	27.4
Yosemite	27.7
Santa Clarita	27.7

DISTRICT	FULL-TIME ENROLLMENT AS A PERCENTAGE OF TOTAL ENROLLMENT FOR FALL TERM
SanJoaquin Delta	27.7
Chaffey	28.0
Cabrillo	28.5
San Francisco	28.5
Los Rios	28.8
Sierra	29.8
Lassen	30.0
Shasta	30.6
Santa Barbara	31.5
Southwestern	32.2
West Kern	32.2
Butte	32.5
Yuba	32.9
Gavilan	33.4
Compton	33.8
Sequoias	40.0
State Center	40.4
San Luis Obispo	41.5
Imperial	41.6

APPENDIX N

DISTRICT	ANNUAL NON-CREDIT ADA AS A PERCENTAGE OF TOTAL ADA
Mt San Jacinto	0.0
Los Rios	0.0
Compton	0.0
Barstow	0.0
Contra Costa	0.0
San Luis Obispo	0.0
San Mateo	0.0
Santa Clarita	0.0
Citrus	0.0
San Bernardino	0.0
San Jose	0.0
Hartnell	0.0
Foothill-DeAnza	0.0
Fremont Newark	0.0
Lake Tahoe	0.0
Imperial	0.0
Southwestern	0.2
South County	0.2
El Camino	0.2
Los Angeles	0.2
Solano	0.3
Cabrillo	0.6
Antelope Valley	0.7
Riverside	0.8
Yuba	1.0
Monterey Pen	1.0
Grossmont	1.1
Redwoods	1.1
Mendocino	1.2
Cerritos	1.4
SanJoaquin Delta	1.4
West Hills	1.5
Sequoias	1.5
Peralta	1.5
Coast	1.7
Lassen	1.9
West Valley	2.1
Sierra	2.4
Saddleback	2.5
State Center	3.1
Yosemite	3.5
Victor Valley	3.7
Palo Verde	3.9
Ventura	4.0
Siskiyous	4.4
Shasta	5.3
Santa Monica	5.4
Kern	5.7
West Kern	6.0
Long Beach	6.4
Palomar	6.7

DISTRICT	ANNUAL NON-CREDIT ADA AS A PERCENTAGE OF TOTAL ADA
Rio Hondo	7.5
Mt San Antonio	8.9
Butte	9.7
Pasadena	9.9
Gavilan	10.0
Merced	10.7
Chaffey	11.4
Coachella Valley	11.8
Mira Costa	13.4
Marin	15.1
Sonoma	15.9
Allan Hancock	15.9
Santa Barbara	18.2
Glendale	19.3
Napa Valley	19.4
Rancho Santiago	19.5
North Orange	20.0
San Diego	34.7
San Francisco	48.0

APPENDIX O

DISTRICT	ASSIGNABLE SQUARE FEET PER AVERAGE DAILY ATTENDANCE
Rancho Santiago	22.3
San Francisco	22.7
Glendale	25.7
San Diego	27.9
Saddleback	28.2
Allan Hancock	33.9
Coast	34.0
Santa Monica	34.2
Foothill-DeAnza	35.1
Sonoma	35.5
Butte	35.5
North Orange	36.2
Cerritos	36.6
Palomar	36.8
Santa Barbara	36.8
Grossmont	36.9
Ventura	37.5
West Valley	37.7
Cabrillo	37.8
South County	37.9
Riverside	38.3
Pasadena	38.4
Los Rios	38.6
Long Beach	39.2
Mira Costa	41.3
Southwestern	41.6
San Jose	41.8
Rio Hondo	42.9
Contra Costa	43.1
San Mateo	43.6
Fremont Newark	44.9
Napa Valley	44.9
Sequoias	45.5
Lassen	45.7
Sierra	45.8
Mt San Antonio	46.0
Los Angeles	46.2
Yuba	46.9
Merced	47.5
SanJoaquin Delta	47.7
Chaffey	48.2
San Bernardino	48.5
Monterey Pen	48.9
Imperial	48.9
Solano	49.0
Peralta	49.6
San Luis Obispo	50.2
Antelope Valley	51.2
Lake Tahoe	53.2
Yosemite	53.3
El Camino	53.8

DISTRICT	ASSIGNABLE SQUARE FEET PER AVERAGE DAILY ATTENDANCE
Palo Verde	54.4
Shasta	54.5
Marin	55.6
Coachella Valley	56.6
Mendocino	56.8
Redwoods	57.2
Citrus	58.6
State Center	59.3
Victor Valley	59.6
Kern	63.4
Hartnell	65.4
Mt San Jacinto	71.2
Gavilan	73.9
Compton	74.1
Siskiyous	77.0
Barstow	82.5
Santa Clarita	88.4
West Hills	96.3
West Kern	138.2

APPENDIX P

DISTRICT	PERCENTAGE OF ASSIGNABLE SQUARE FEET IN LABORATORY AND SPECIAL FACILITIES
Lake Tahoe	17.1
Palo Verde	28.5
Mendocino	36.1
Siskiyous	39.6
Napa Valley	40.0
Grossmont	41.6
Saddleback	42.0
Fremont Newark	42.3
Marin	42.4
Yosemite	42.6
San Francisco	43.1
Imperial	43.4
Rancho Santiago	43.6
Yuba	43.7
Chaffey	43.7
Sierra	44.0
San Mateo	44.3
South County	44.3
Foothill-DeAnza	44.3
Los Angeles	45.1
Kern	45.5
Lassen	45.8
Pasadena	45.9
Victor Valley	45.9
West Valley	45.9
Contra Costa	46.1
Mt San Antonio	46.4
Cabrillo	46.5
Monterey Pen	46.5
El Camino	46.6
San Diego	47.0
Ventura	47.3
Mira Costa	47.4
Coast	47.4
Santa Monica	47.5
West Kern	47.7
West Hills	47.8
Southwestern	47.9
Solano	48.0
Rio Hondo	48.0
Los Rios	48.1
Cerritos	48.2
Sequoias	48.4
Allan Hancock	48.5
Compton	48.6
Peralta	48.8
Sonoma	48.9
Glendale	49.1
Riverside	49.2
North Orange	49.3
Coachella Valley	49.6

DISTRICT	PERCENTAGE OF ASSIGNABLE SQUARE FEET IN LABORATORY AND SPECIAL FACILITIES
Santa Barbara	49.8
Long Beach	50.0
SanJoaquin Delta	50.0
Palomar	50.1
Citrus	50.2
Gavilan	50.7
San Bernardino	50.8
Shasta	50.9
Barstow	51.2
Hartnell	51.8
San Jose	51.9
Mt San Jacinto	51.9
Butte	52.4
State Center	52.8
Antelope Valley	53.8
Redwoods	54.2
Santa Clarita	54.7
San Luis Obispo	55.0
Merced	55.4

CHAFFEY COMMUNITY COLLEGE
A Century of Service
Office of the Superintendent/President

July 24, 1985

Ms. Nancy Stetson
Marin Community College District
Kentfield, CA 94904

Dear Nancy:

I worked my way through your entire dissertation and concluded it is a good piece of work. I do, however, have a couple of questions:

(1) In Chapter 1 at the bottom of page one regarding collective bargaining, I would be interested to know what statistics you have to support your statement that collective bargaining has indeed resulted in salary increases.

(2) Chapter 1, page 2 - you state prior to 1978 community colleges received about 55 percent of their revenues from local property taxes. As I recall, the average was higher. In San Jose the figure was closer to 80 percent.

You ought to be able to sell the idea to CEOs. It is valuable to be able to compare costs with other districts, particularly with districts comparable in size. Board members are usually impressed when they can compare with other districts, especially if statistics are favorable for their own district.

I used your information to compare Chaffey with five other districts comparable in size and found the figures to be most interesting. Your idea to provide a summary of your dissertation to all CEOs in the state is an excellent one. You should also get a good response if you provide ERIC a copy.

Hope to see you when I return to see Myrna Miller - that is if she invites me to come back.

Cordially,

Otto Roemmich
Interim Superintendent/President

OR:stw
Enclosure

BEST COPY AVAILABLE

5885 Haven Avenue • Alta Loma, California 91701 • [illegible]

BIOGRAPHICAL SKETCH OF PARTICIPANT

NANCY E. STETSON
222 Butterfield Road
San Anselmo, CA 94960

Nancy E. Stetson is the Director of Public Affairs and Development for Marin Community College, a two-campus district serving the suburban community of Marin County, California. She has held the administrative position for three and a half years and is responsible for planning, managing, and evaluating programs in community and legislative relations, communications, and resource development. Prior to her position at Marin, she served for ten years at Wenatchee Valley College, a two-campus community college in a rural part of Washington State. She held administrative positions for five and a half years at Wenatchee, including Assistant to the President for Community Services, Assistant to the President, Information and Development Officer, and Public Information Officer. In addition to these full-time appointments, she held a variety of other appointments, including instructor of credit and non-credit courses, workshops, and seminars in proposal writing, business communications, and management training at both Wenatchee Valley College and Marin Community College; administrator of selected student services at Marin Community College; and administrator of the north campus of Wenatchee Valley College.

She earned an associate in arts degree at Wenatchee Valley College, a bachelor of arts degree at The Evergreen State College, and a master of science degree at Central Washington University. She holds California Community Colleges' credentials as instructor of public services and administration; supervisor; and chief administrative officer.

Nancy Stetson has been active in national, state, and local community college organizations, including Association of California Community College Administrators, American Association of Women in Community and Junior Colleges, National Council for Community Services and Continuing Education, National Council for Resource Development, and National Council for Community Relations. She served on the national board of the National Council for Resource Development from 1977-84, and as Vice President for Programs in 1983.

She has made numerous national, state, and local presentations to community college and other audiences on such topics as managing interpersonal relationships, developing resources and raising funds, taking risks, using the community college as a resource in community development, managing time, planning, and marketing. She also has provided consulting and evaluation services to a number of community colleges.

Publications include documents and articles. Documents available through the U.S., Educational Resource Information Center (ERIC) include (1) "The Development of an Historical Perspective on Private Financial Support for Public Two-Year Colleges," 1985, ED 253 287, (2) "The Effect of Direct Mail and Telephone Contacts on Rate of Return of Students Who Dropped Out," 1985, ED 253 286, (3) "An Illustration of the Interaction of Trends in the Politics, Law, Economics, and Financing of American Postsecondary Education," 1985, ED 253 284, (4) "Major National Societal Trends Likely to Affect the Marin Community Colleges Through the Year 2000," 1985, ED 253 285, and (5) "Relationship Between Systematic Planning at Community Colleges and Goal Agreement," 1981, ED 203 899.

"Raising the Roof for an Art Gallery," an article, was published in Small Town, October, 1976. Other publications included light verse, poetry, short stories, and newspaper articles. Unpublished materials included "Philosophical Characteristics of Community Colleges as a Basis for Curriculum and Program Planning," and "Techniques for Forecasting Social Change."

I certify that I have read and am willing to sponsor this Major Applied Research Project submitted by Nancy E. Stetson. In my opinion it conforms to acceptable standards and is fully adequate in scope and quality as a Major Applied Research Project for the degree of Doctor of Education at Nova University.

9/24/85
(date)

Dr. Elizabeth L. Van Dalsen
MARP Advisor

I certify that I have read this Major Applied Research Project and in my opinion it conforms to acceptable standards for a Major Applied Research Project for the degree of Doctor of Education at Nova University.

9/24/85
(date)

Dr. Martha Navy
Local Committee Member

This Major Applied Research Project was submitted to the Central Staff of the Center for Higher Education of Nova University and is acceptable as partial fulfillment of the requirements for the degree of Doctor of Education.

(date)

Dr. Phil DeTurk
Central Staff Committee Member

ERIC CLEARINGHOUSE
FOR JUNIOR COLLEGES
JAN 24 1986